

THE Psychological Review

J. MARK BALDWIN
PRINCETON UNIVERSITY

EDITED BY
AND

J. McKEEN CATTELL
COLUMBIA COLLEGE

WITH THE CO-OPERATION OF

ALFRED BINET, ÉCOLE DES HAUTES-ÉTUDES, PARIS; JOHN DEWEY, UNIVERSITY OF CHICAGO; H. H. DONALDSON, UNIVERSITY OF CHICAGO; C. S. FULLERTON, UNIVERSITY OF PENNSYLVANIA; WILLIAM JAMES, HARVARD UNIVERSITY; JOSEPH JASTROW, UNIVERSITY OF WISCONSIN; G. T. LADD, YALE UNIVERSITY; HUGO MÜNSTERBERG, HARVARD UNIVERSITY; M. ALLEN STARR, COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK; CARL STUMPF, UNIVERSITY, BERLIN; and JAMES SULLY, UNIVERSITY COLLEGE, LONDON.

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The Psychological Review.

THE REVIEW, being about to complete its second volume, ventures to call attention to the following partial list of American University Professors and instructors who have written for it. Their articles comprise all departments of psychological work:—

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Other University teachers have contributed from Michigan, Wisconsin, Clark, Cornell, Wellesley, Brown, Wesleyan, Indiana, Iowa, Lake Forest, Stanford, Bryn Mawr, Smith, Illinois, Miami, Bellevue Medical, the Catholic University of Washington, etc. Foreign writers for the REVIEW have included:

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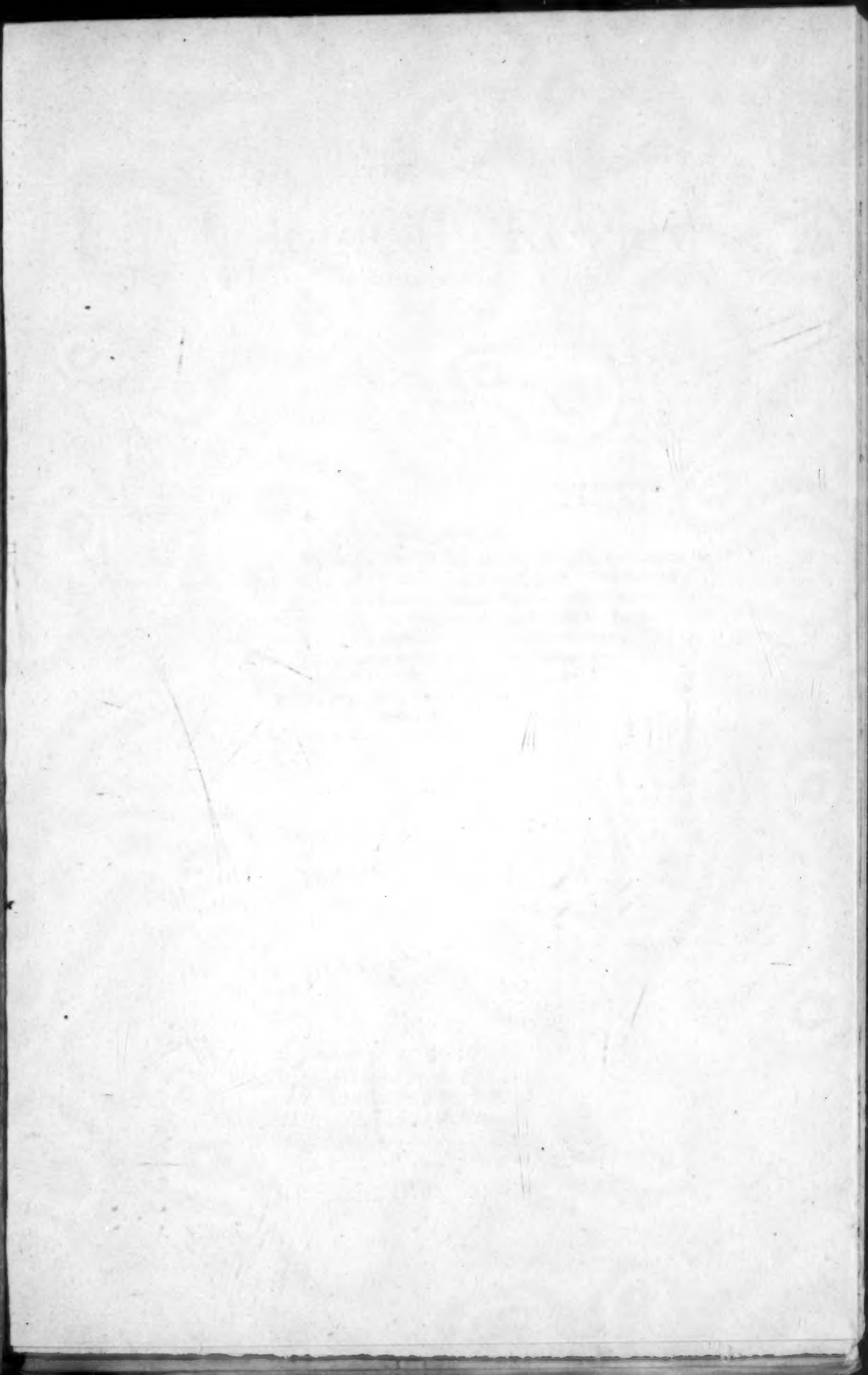
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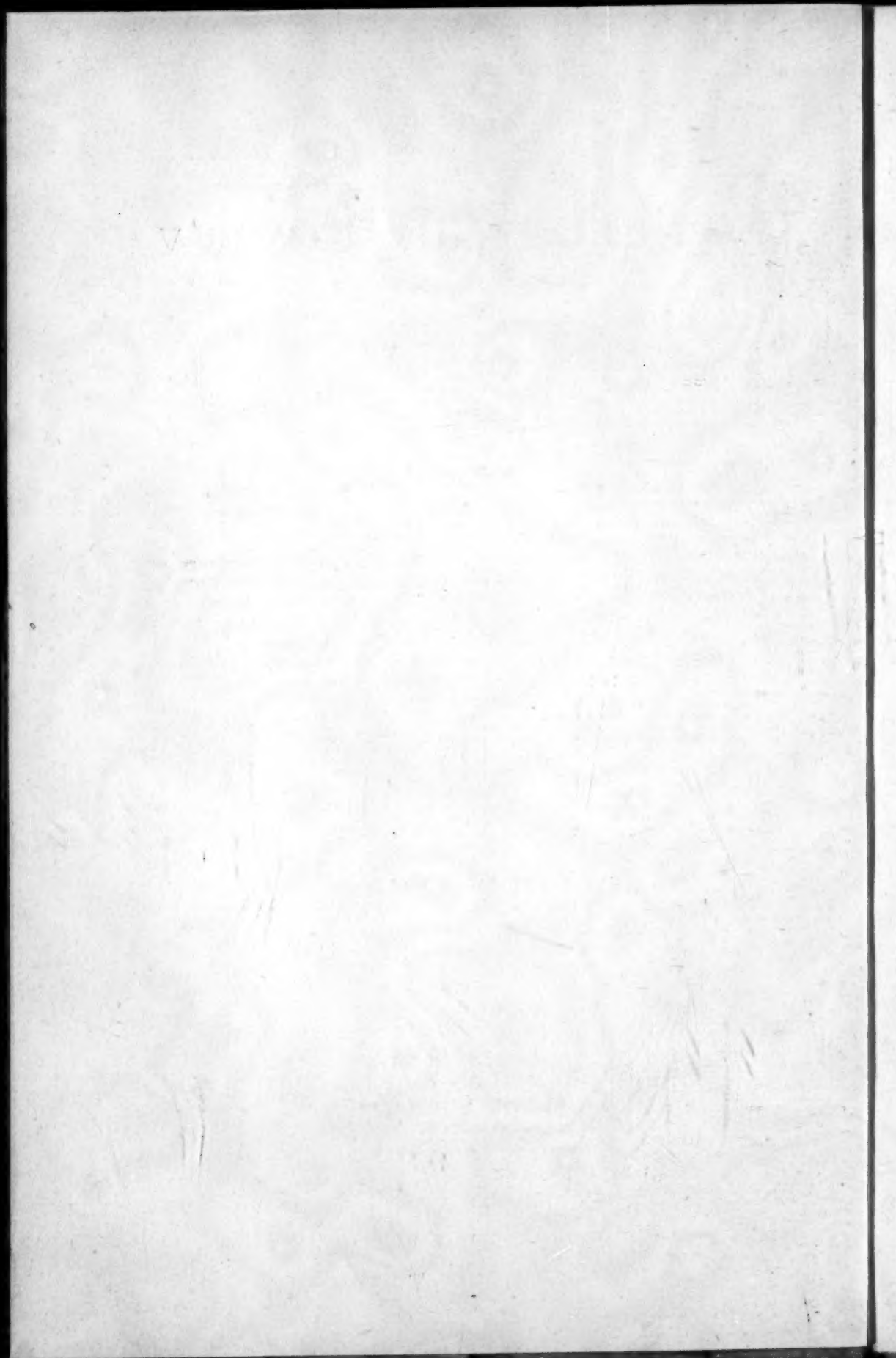
The first issue of an annual Bibliography called *The Psychological Index* appeared early in the year 1895. It comprises titles of the literature of Psychology and cognate subjects in all languages for 1894. It may be ordered from Macmillan & Co., price 75 cents. The Index is prepared by Dr. Livingston Farrand of Columbia College, and Mr. H. C. Warren of Princeton, in cooperation with the editors of the REVIEW. It is sent free to all subscribers to the REVIEW.

The REVIEW also announces the founding of a series of *Monograph Supplements*, consisting of longer dissertations, researches, &c., to be issued at intervals as they may be accepted by the editors. They will be numbered consecutively and 4-6 numbers will constitute a volume. The first of these *Monograph Supplements* has been issued. It is a research on *Sensations from Pressure and Impact* by Dr. Harold Griffing, (pp. 52, price 75 cts.)

These *Monographs* may be ordered from the same publishers at the rate (by subscription) of \$4 a volume of about 600 pages; or by single numbers, at from 30 cents to \$1.00, according to the number of pages. Papers for publication in this series during 1896 may be sent to Prof. J. McKeen Cattell, Garrison-on-Hudson, New York.

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THE PSYCHOLOGICAL REVIEW.

THE CONFUSION OF FUNCTION AND CONTENT IN MENTAL ANALYSIS.¹

BY DICKINSON S. MILLER,

Bryn Mawr College.

If we are not quite ready to say, with Heracleitus, that strife is the father of all things, at least it is a familiar truth that strife is the father of nearly all things that are good in scientific discovery. A truth we do not all so clearly see is that that unflagging controversy which is the life of a science requires a basis or background of comity and order to be truly productive. We must be agreed upon the ground of hostilities, upon the scene of action, upon the permitted weapons of warfare, before our campaigns can settle anything, or draw any definite frontier across the map of opinion to divide knowledge from error. And one thing more is needed if the best results are to issue from our disputation: the chances of war must be so narrowed and defined that we know without chance of mistake when we are defeated. The celebrated virtue of the British soldier is nothing better than a vice in the controversial engagements of science.

The capital importance of this last condition is far too little considered. The danger is a double one. The wasteful pertinacity that protracts discussion, when it ought to be applying its results, is not worse than those premature

¹ A paper read before the American Psychological Association in the session of 1893. I have not thought it needful to remove the traces it bears of the occasion of its delivery.

surrenders that have checked progress so often of late in such sciences as political economy, metaphysics and psychology. For such a surrender withdraws from the controversy an element of thought that should in its measure go to the making of the final result. The empiricists among you will not need to be reminded of the deplorable magnanimity of J. S. Mill, which prompted him to such gratuitous concessions of his father's principles, nor of how, the process once begun, his own principles melted away in the hands of his successors. If transcendentalism has almost fallen silent in Germany and empiricism forgotten at least its bolder tones in England, it can hardly be in *both* cases because unbiased reason has passed judgment.

Now, all these mischiefs of discussion are rife at the present moment in psychology. To contribute to the controversy is in many cases merely to contribute to the confusion; and, accordingly, it is well to turn to the more profitable business of defining that basis of agreement which is a chief means of making disagreement fruitful.

Among those unsettled matters which are in their turn unsettling to much besides, I take as one of the foremost the relation of content and function in the analysis of mental phenomena. There is a wide distinction here which in contemporary discussion is, as I think, too commonly obscured. A mental state is significant, of course, to the psychologist, not only for what it is, but for what it brings about; but it is widely assumed that what it brings about must in some sort be visibly reflected in what it is—in its intrinsic character. An idea has not only a particular 'content'; it has also a part to play in the mental life. It calls up other ideas; it influences the future course of thought or action. Now, the confusion to which I refer consists in supposing that mental causes, unlike physical, must themselves be an index, by the internal evidence they offer, of the train of consequences that they entail; that their function must be wholly determined by their content, and that accordingly their content is a sufficient key to their function. But this assumption, which is not self-evident, is further, I believe, entirely false.

Instances of what I mean abound; and I cannot bring the matter before you better than by drawing attention to a succession of cases in which the confusion and its attendant mischief are unmistakable.

The difficulties that figure in the time-worn dispute about the nature of general and abstract ideas are familiar. How can we employ our minds about a class of things if we are not in possession of an express class-idea, distinct from any idea whatever of concrete particulars? And yet how are we to frame a notion of a horse, for example, which shall represent neither a particular horse nor a collection of horses, which shall have color, but neither black, brown, nor any especial color; figure, but no one figure; size, but no exact size? How can we disengage those abstract elements common, as we say, to a class from the irrelevant particularities in which they are embodied and in which alone they exist. The difficulties of the problem are so obstinate that neither the so-called nominalists nor the so-called conceptualists, as a party, rest securely upon definite formulas, but covertly resorts at need to the language, if not the conceptions, of the other. The two opposing doctrines, in the strict extremity of their statement, seem the two horns of a hopeless dilemma, and the manifold compromises combine the difficulties of both.

Nor do these difficulties yield to the suggestion of Professor Huxley, Professor Sully and others, that the generic image may be a vague or blurred image, like a 'composite photograph.' The suggestion completely misses the point of the problem. A vague color or form, for instance, is a particular visual phenomenon and corresponds neither to all the colors or forms of its class (for it is single), nor to each of them (for they are mostly not vague); and it seems equally beside the mark to say that, although the conceptual image presents only some particular, yet it is coupled with an indefinable momentary 'sense of our meaning' which 'refers' the image to the whole class, and shows us how to 'interpret' and apply it. In order to *mean* a genus and not a particular, we must think of it, and how we can think of it is the very thing that gravels us. The verb 'to mean,' which

repeatedly of late has masked the begging of a psychological question, is in this case a somewhat thin disguise.

But there is a resort less unpromising. Are there not really detachable psychic elements identical in kind in our ideas of the different members of a class? To avoid irrelevant complications, consider at once a class of sensations or sensory perceptions; let us say the class of colors. One is prompted to answer distinctly, No: there is assuredly no identical element of 'color' discoverable alike in a shade of pure red and a shade of pure green, regarded as sensations. The two hues are 'similar' in so far as they are both colors, but they are in no respect 'the same;' they are not similar by having each a little of some one psychic material. But may not this answer be hasty? May there not be, invariably bound up with these colors in our perception and remembrance, some item of feeling incident to the physical process of vision? And might not this element remain the same, whatever color was before the eye, so that its presence would come to characterize the whole class of colors? Observe the issues here at stake. We speak of visual sensations and auditory sensations, for example, as of two classes self-evidently different—divided from each other by a broad disparity of sensational complexion. Yet there is an obscurity here. What is the tie of kinship between the color red and the color green which does not exist between the color red and the sound of a bell? We say the color and the sound are obviously less alike than the two colors; but wherein? Green and red are wholly and at all points distinct; how can red and the clang of the bell be more so? You see how we are touching the whole broad problem that Professor James and Professor Stumpf have discussed so suggestively—the problem of the analyzable or unanalyzable character of the sense of similarity. There are bold analysts who would not stickle at saying that the so-called visual sensations are thrown together into a class by the mere circumstance that they are acquired alike through the eye and the auditory sensations by the mere circumstance that they are acquired through the ear; the same applying to the other senses. This does not mean that if the visual sensations, in

themselves unchanged, should come through the ear they would be assimilated at once to the present auditory sensations and appear no longer in any wise alike; a statement which oversteps the bounds of sober discourse. It means that what we now experience and remember as visual sensations contain within them an element of feeling, muscular, perhaps, which is impartially the same in all. Now, if we can extend this to all the senses, it certainly seems to throw some illumination upon the problem of generic ideas; for these elements of feeling when detached might form the class-notions of the various sets of sensations on which they attend. But clearly the theory cannot stop short at those grand divisions that we call the senses. It must explain why dark blue and light blue, though really quite distinct colors, appear intrinsically more alike than dark blue and green; and so through a broad range of cases. Shall we suppose that, besides the attendant sensation which characterizes colors at large, there is a hierarchy of less general attendant sensations, distinguishing classes and sub-classes and still smaller groups until we come to the particular? It is a somewhat violent hypothesis; yet nothing short of it would seem to rescue us from the admission that there are classes of mental facts whose members have no one element in common.

And it is not only that the supposition strains our credulity; even on its own showing it does not really go far enough to help us here. I hope you will bear with me if I seem now and again to be too metaphysical in method. Metaphysics was certainly not nominated in the bond for this paper; but one can no more get a pound, nay an ounce, of strictly accurate psychology without a few drops of what some will call metaphysics than Shylock his covenanted flesh without blood. Either these common elements, in the case of colors, for instance, can be disengaged from the special elements with which they are ordinarily blended, or they cannot. If they cannot, we cannot form with them a pure generic image. If they can, then we ought to be able to imagine the residual quality of red or of green, apart from the 'common element' which allies it to the rest of its

class; and we ought to find that, thus imagined, it no longer shows likenesses or unlikenesses. For it would seem to be clean against psychological analogy to hold that we could extricate and isolate the common elements and yet not the special ones. But manifestly no such disappearance of likenesses ever takes place. It is a disappearance we should be quite at a loss to conceive.

I know that there are other replies that can be made to my objections, as well as other objections to this theory that could be advanced, but I believe the reply to be fallacious and the other objections for our present purpose needless. So far—perhaps too long—I have thought it necessary to dwell upon this conception by way of clearing ground. Having pointed out what seems to me its fatal weakness, I must pass on. In this brief compass I cannot attempt to prove my suggestions to the bitter end; I can do but a little more than lay them before you.

If I am right, then, this last resource of conceptualism is unable to sustain that doctrine, which accordingly must fall to the ground. That is to say, the tenet that a single mental state can by its content represent what are called the abstract qualities common to a class, cannot stand. But those who are perplexed by this outcome forget that there is another sense in which a mental state can represent a class. It can represent a class by its function, by the consequences it produces; not by what it is, but by what it does. An image with particular content can *do duty* as the representative of a class. By its psychical connections, in a word by its associations, it can prompt the right action towards the members of the class and inhibit any false thoughts about them.

Consider some of the critical cases. I assert of an object that it is red: 'The book is red.' The word 'the' implies that certain peculiarities of the book, perhaps its size, shape and position, are already known to you; but it is out of sight, and I am informing you of its color. Now, some psychologists would tell us that in thinking my sentence, 'the book is red,' you are affixing in thought to an object in part previously known an abstract property or 'universal'

also previously known. This is pure conceptualism. Others—some of the older Associationist schools, to wit—hold that we are seeing the book with the mind's eye, as similar to imagined red objects and as contrasted with imagined objects of another color. Judgment they regard, in accordance with the alleged psychological law of relativity, as involving comparison and contrast. But what shall hinder us from supposing—so far in agreement with the fine analysis of judgment contained in Professor Benno Erdmann's *Logik*—that we simply fill out our previous vaguer image of the book by imagining it as red—that shade of red which the word, used in connection with the word book, first calls to our mind. Previously we had conceived it with a tolerably specific size and shape, but the color was vague, dull and shifting. Now we conceive it a distinct red. The shade of red may need correction when we see the book, but meantime we have in such wise completed our image that we can use the word red of the book with security,—enable a servant, perhaps, to distinguish and bring it, or a child to avoid touching it. And this is clearly a typical case.

Thus, as regards a multitude of instances, we have got rid of the psychological abstract altogether, and have seen that the particular image, though perhaps imperfectly resembling the object in point of content, yet duly performs the function of guiding our action towards it, and of summoning at need the correct word. I may remind you that the word 'book,' as well as the word 'red,' called up a perfectly concrete, though probably a blurred or fragmentary or shifting, vision. The other cases show no essentially different process. Suppose I employ an abstract or generic term at large, as one may say. Suppose I ask: 'Do you prefer red or blue in bookbinding?' Before answering you compare in imagination a series of particular colors associated with the word red with a series of particular colors associated with the word blue. It would be idle, even were it possible, to compare generic red with generic blue, for your preference may be only for one especial shade. Here you see my deliberation is guided aright, because the word red

and the word blue duly perform their function of calling up the two ranges of colors with which they are severally associated. My understanding of the question and my correct answer depend mainly on the function, not the content, of some of my ideas. Suppose, again, that I lay down 'a general proposition: 'all bright-colored books are easily soiled.' As an acute friend of mine once remarked, the mental process is better expressed by saying, 'Any bright-colored book is easily soiled.' For what does the hearer (and with some modifications the speaker) mentally do in the matter? He runs hastily over a few cases—of bright-colored books long kept. If the associations thus started bring up a contrary instance, an instance, let us say, of such a book remaining untarnished under much handling, the 'general proposition' is rejected; that is, it does not become a belief, and the associations of its words do not serve as guides. If, however, all the instances are conformable, it may become a belief. I submit that the word 'all' in such propositions has no specific mental content whatever; that its force is merely to set the mind running over instances of the connection of ideas suggested by the rest of the proposition, and to make the proposition stand or fall as a belief, according to the harmony or discord of that connection of ideas with any instance whatever that the mental quest may find. The word 'all'—I mean the word as a mental phenomenon, the perception or idea of its sight, sound or articulation—is there for its function and not for its content. Virtually any other content would serve just as well if its function were the same. "Nothing," says Professor James, in the chapter on Conception in his 'Principles of Psychology,' "can give us the thought of 'all the possible members' of a class," but "an altogether special bit of consciousness *ad hoc*." And this 'bit of consciousness' is a transitive feeling, a mere 'sense of our meaning'; it belongs to the 'fringe' of thought. But surely the smallness of this modest bit of consciousness does not excuse it from the obligation of being intelligible. Even such a very small 'bit' cannot, in the long run, escape the eye of the psychological inspector; and if it should turn out to be carrying concealed

on its little person all the contraband assumptions of an unanalytic Conceptualism, it would go hard indeed. Do not mistake my meaning. Indisputably such transitive forms of consciousness exist and have important functions. But their importance depends on their appointed sequel, on what they bring after them in the mental train; not on the inward significance and essence of their 'altogether special' selves. In content they may be the merest chaff and trumpery of consciousness—the feeling of some momentary tension of the skin or twitch of a muscle. Is it anything but what Mr. James so aptly terms 'the psychologist's fallacy' to suppose that such transitive feelings must needs foresee their sequel and consciously lead to it? Is not this a signal example of the confusion between function and content?¹

I said that the universal proposition might become a belief. The psychological condition that we call belief affords as good a case as one could have to enforce the distinction I am making. The current theories as to the nature of belief fall naturally into three classes. Descartes and Spinoza, and in recent times Professor Bain and Professor Bergmann, would assimilate it to the phenomena of volition. J. S. Mill and Professors Brentano, James, and Windelband may be named among those who regard belief as a form of consciousness *sui generis*, and not to be analyzed. According to thinkers of both these classes, the distinguishing characteristic of belief is to be found in the *content* of the mental state so named.

But there has been at the same time an altogether different course of thought on the topic. James Mill analyzed assent as an 'indissoluble association.' When I regard a certain conjunction of phenomena as the actual conjunction,

¹ It has been convenient to take instances from a work certain to be familiar to all psychologists and serious students of psychology. Meanwhile it is as well to add that most of the chief theses of this paper are identical or allied with those of an article by Professor James on 'The Function of Cognition,' *Mind*, Vol. X, and of such passages in his 'Psychology' as that on pp. 267-70, Vol. I. Professor James has made acknowledgment to myself in his Presidential Address, published last March in this REVIEW, for 'reconfirming' by the paper now printed his 'sometime wavering opinion.' My gratification at finding that my endeavors have been so blessed is greatly heightened by the sense that out of a hundred debts that cannot in sum be paid or measured, I have in one case been able to render him his own.

it means that the phenomena maintain to my mental vision that especial relation unaltered whenever I think of the matter. But in his notes on James Mill's 'Analysis of the Human Mind,' John Stuart Mill pointed out that this is not invariably the case. I *believe* that the *World* building—to take a homely instance—rises there at the corner of Park Row and Frankfort street. Yet I can conceive it away. I can in imagination, if I so choose, station a Greek temple or a Gothic cathedral on the spot. Clearly, then, the association is not indissoluble. This answer seemed final. But a new theory has been formed out of the ruins of James Mill's which sustains attack more successfully, as I think, than any other in the field. I refer to that of Mr. Alfred Hodder, which it is to be hoped the author will soon be moved to publish. By his account of the matter, a belief is a conceived conjunction of phenomena in which the elements can indeed be torn apart by an effort of will, but in which, if left to themselves, they remain in the same position; the degree of the belief being proportional to the tendency of the elements to maintain or, if deliberately separated, to resume this position. Compared with Mill's definition, this theory makes it, not an *indissoluble*, but a *spontaneous*, association of ideas. The cohesion of the conceived elements may be likened to the elasticity of a strap of india-rubber. The strap can indeed be drawn out surprisingly far; but once relax the effort and it flies back at once to its natural dimensions. So precisely with our case of belief. I can, by some exercise of will, fancy a temple or a cathedral where the *World* building now stands; but no sooner do I cease to put forth the voluntary exertion than the poetic vision vanishes, and the hard prose of the newspaper building stands there to the mind's eye as remorselessly as ever.

I hold that this analysis of belief withstands objection better than any other offered to us. I have heard it urged, for instance, on the other side, that though we believe the earth to revolve round the sun, yet so far from that being the form the relation spontaneously takes to our mind, it is only with the greatest pains that we can imagine anything

else but that the sun goes round the earth. But this argument is entirely ineffective. For the purposes of daily life, I do imagine the sun rising and setting over the broad earth, and that is at such moments my belief. But when I am thinking of the planetary balls rolling in space (the conception with which education has familiarized me), then I spontaneously fall to conceiving the ball I call the earth revolving round that I call the sun. The conception of daily life does duty for the concerns of daily life; but it gives place to a totally different conception the moment an astronomical point of view suggests itself. It is hard, no doubt, to think of the earth as a sphere revolving in space, hard to realize the astronomical view; but when I once fairly do this, the earth begins of itself as it were, in my imagination, to revolve round the sun.

If I am right in deeming this theory of belief the best working hypothesis in the field (much virtue in that 'if,' you will say, but after all I can do no better in my brief space than suggest lines of argument, not carry them fully out)—if this theory holds its ground against the others, you see it is a triumph of those who find the distinguishing mark of belief not at all in the content or matter of the ideas present, but wholly in their mode of behavior, as one may say,—in their influence in preserving each other in firm association; in fine, in their properties or *function*.

By way at once of pointing and of summing up what I have said about this confusion in the subject of abstract and generic ideas, let me take an exceptionally difficult case. In the extremely careful work of Professor Goswin Uphues, of Halle, recently published—*Die Psychologie des Erkennens*—he deals once more with the old puzzle as to how our conception of 'nothing' can at once be a real idea possessed of a genuine content, and yet truly represent nonentity. Even Professor Uphues' answer, scrupulously reasoned and precisely stated as it is, does not, to my thinking, deliver us from the ultimate difficulties of the problem. I cannot understand how we can have a genuine idea of nothing if the content of an idea is the only sign of what it represents. I do not see how an idea by its intrinsic character can accu-

rately portray—nothing. But if we may look to its *function* also, the explanation is plain. If I believe that a certain room has nothing in it, I think of the empty interior of it—the bare walls and clear floor; and the mind, or if you will the brain, is so *set*, as we say of a trap, that any thought of an object in the room is promptly negatived so soon as it presents itself. My belief that there is nothing in the room is not constituted by my mere picture of a vacant room, but by the spontaneous self-maintenance of that picture in my mind, and the instant rejection, that is, failure to coalesce with the picture, and hence usually disappearance, of any intruding thought of contents. But we have conceptions of a more absolute ‘nothing.’ Take the belief that before a certain time nothing existed in space. In that case the picture of space empty at that time comes before the mind, and our habitual tendency to imagine it filled is checked as often as it shows itself. It may be objected, however, that you cannot conceive space except by virtue of there being something in it; that a strictly empty space excludes even the blue or gray background of atmosphere or cloud. Well, I do not wish to prejudge the question how far the visual element is necessary, as this objection supposes it, to the notion of space, and so I pass on to the extremest instance of non-entity within the bounds of thought. Let the belief be that before a certain date there existed absolutely nothing, neither matter nor space, angel nor spirit—not even the *locus* of a world. The content of my thought, which was first the empty room and then the void space (supposing the latter content possible), now disappears completely. Does the possibility of conceptions or belief disappear with it? By no means. What we call our belief in such a thoroughgoing nonentity is simply an attitude of the mind in which it stands ready to down any rising image of existent things as at that time in the world. Our belief is a state of standing indisposition on the mind’s part to entertain any ideas of a certain character. Here you see the verbal sign has (save its sight, sound, or articulation) no ‘content,’ no corresponding mental image at all. Its content is swallowed up in its function. Do not tell me that this is ‘the grin with-

out the cat' of popular fable. In truth it is, like the 'potential energy' of the physicist, a prophecy or promise—in this case a negative promise; namely, such a state of tendency in the mind as insures the prompt suppression of any intruding thoughts of a certain order.

Notice in all this how far one goes astray when one assumes that language in its *structure* is in any sort whatever the copy or the homologue of thought. In language the predicate comes after the subject; in thought they come together. In language they are connected by a copula; but there is no copula in thought. There are indeed no verbs in thought. In thought there are but pictures, painted in the pigments of the different senses—picture supplanting picture in endless substitution. 'Action' and 'activity' are but the names we give to certain sequences in the melting and merging pictures as they pass. To speak of an action of the mind or the Ego, of an activity of consciousness itself, when attempting the language of analytic psychology, is to use an inept and unhelpful metaphor. Psychological study impresses us ever afresh with the lesson that language is a mere system of signals, dependent for its form and order on the structure and convenience of a bodily organ. Were we Hydra-headed or had we a hundred tongues, words might go abreast, might group themselves in a thousand new fashions, and thus in some respects more nearly take the shape of thought. But the broadest disparities—such as those which this discussion has made prominent—would still remain. Not long ago I stood on the bridge of a vessel which was signaling a lighthouse. The captain signaled with Coston lights and Roman candles. Now, it would be no more absurd to suppose that the captain's ideas thus expressed were related together as the Coston lights and the Roman candles than to take the grammatical form of the proposition for an outward and visible copy of the order of thought.

I now come to the subject in which the confusion of content and function has worked the most subtle and far-reaching harm; I mean the psychology of perception. It is the function of what we call our sense-perceptions to stand for

certain objective facts,¹ to stand for them in such wise as to guide our action in deference to them. These sense-perceptions must so play their parts that we do not fall into a pit, or walk off a precipice into thin air, or knock our fragile heads against a wall. Now things are so ordered, as we believe (let us not pry into the philosophical reasons of it here) that our perceptions do us this service by *resembling* the objective facts. To be sure it is common to make exceptions to this in certain items, color, taste, odor, etc.—but lay all that here aside. The pertinent fact is this: we find it by many assumed that this function must be *inscribed* as it were in the content of the perceptions themselves; that they must exhibit a conscious intent to represent outer objects as a portrait represents a man. In the portrait's case, of course, it is we who, looking on the man and on the painting, ascribe to the one the function of representing the other. But imagine if you can a portrait which shall be itself visibly possessed with the purpose of being like some person, and you have the parallel of what these thinkers ascribe to certain mental states. This is what I call looking for the function in the content; and I regard it as a forlorn quest due to a confusion. Those experiences that we name color and touch and resistance and the like are veritably there, and they guide our daily living; but they do not—touch and resistance no more than color—set up the absurd pretension of getting out of themselves or profess to reveal anything but their own intrinsic form and character. How we can know, if this be true, that they answer in some sort to a world beyond them is a question whose answer, plain and sufficient as I conceive it to be, does not belong to a psychological inquiry.

I know it was maintained yesterday² that the whole of this topic of our perceptive knowledge is outside the pale of psychology and lies on philosophical land. Professor

¹ I may not detain the reader for any metaphysical amplification or defence of these insufficient terms. But it will not be wholly useless to avail myself of the broad shelter of 'idealism'—to mention that my view is among those covered by that somewhat vague and varying name.

² See Professor G. S. Fullerton's Address on 'The Psychological Standpoint,' published in this REVIEW, Jan. 1894.

Fullerton, as you remember, erected a tall fence between the two, and gave us a concrete example of the relentlessness with which trespassers will be prosecuted. Well, definitions and exclusions are easy. I shall not make a new fence, and return railing for railing, as Dr. Arnold once said, by way of proving that the problem of perception belongs to psychology and not to metaphysics. I know that it belongs to both spheres. Psychology includes all mental facts, and if certain forms of consciousness purport to tell us of other things outside themselves, the fact of their so purporting is a mental fact and lies manifestly within the purview of psychology. I believe it, however, not to be a fact, but one of the most singular fictions in the history of thought. To my thinking this 'self-transcendence,' 'transubjective reference' and all the handsome phrases devoted to its service find no better warrant in introspection than they find countenance in logic. Obviously, I cannot stop to prove this in the dwindling residue of my time. I can only remark that if I am right (again an *if* of much virtue) we have here the source of certain modes of conceiving mental fact which have spread confusion through the terminology and thought of our science. For example, if we confound the function and the content of a knowing mental state, if we read the function into the content and say the mental state *means to know*, then immediately we must conceive of the mental state as an act, or an act with its results. Our would-be scientific language insensibly falls into metaphors taken from speech or painting in order to describe it, and says that it *reports* or *pictures* things out of consciousness. Then we grow used to speaking of the pictures on one hand and the picturing process on the other, as though the mind consisted of a stereopticon and a screen on which views are cast. We distinguish the thinking and the thing thought, or the feeling and the quality felt, or the thought and its mental object (which is 'what the thought thinks') or, with certain Germans, *das Vorstellen* and *das Vorgestellte*; all these terms meaning to refer to psychological and none of them to physical facts. And then, after all, as we look upon consciousness it seems to present a single and not a double face; and we proceed

to say, perhaps, with Professor Benno Erdmann: only *das Vorgestellte* is immediately given; the *Vorstellensvorgang* is inferred. Or we say with Professor James: only the objects are immediately given; the feelings themselves, the states of consciousness, might even conceivably be doubted. I submit that all this cleavage and distinction, together with these wonderful consequences, vanishes utterly away when we cease mixing content with function. For then we see, if I may for the moment use terms I reject, that the feeling as distinguished from the felt qualities is indeed an out-and-out fiction, and that the *Vorstellensvorgang* is falsely inferred. There is neither mental 'object' ideally projected from a 'state of consciousness' nor 'state of consciousness' endowed with the property of projecting it. State of consciousness and mental object, idea and content, are one.

THE ORIGIN OF A 'THING' AND ITS NATURE.¹

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The present growing interest in genetic problems, as well as the current expectation that these discussions may render it necessary that certain great beliefs of our time be overhauled—these things make it important that a clear view should be reached of the sphere of inquiry in which questions of origin may legitimately be asked, and also just what bearing their answer is to have upon the results of the analytic study of philosophy.

We already have, in several recent publications, the inquiry opened under the terms 'origin vs. reality'—or, in an expression a little more sharp in its epistemological meaning, 'origin vs. validity.' I should prefer, in the kind of inquiry taken up in this paper, to give a wider form to the antithesis marked out, and to say 'origin vs. nature'; meaning to ask a series of questions all of which may be brought under the general distinction between the 'how' of the question: how a thing arose or came to be what it is; and the 'what' of the question: what a thing is.

Well, first, as to 'what.' Let us see if any answer to the question 'what is it?' can be reached, adequate to our needs, in any case of genetic inquiry. It seems that the philosophy of to-day is pretty well agreed to start analysis of a thing inside of the behavior of the thing. A 'thing' is first of all so much observed behavior. Idealists pass quickly over the behavior, it is true; it is too concrete, too single, for them: it is not to them a thing, but a 'mere thing.' But yet they do not any longer allow this 'mereness' to offend them to the extent of drawing them off to other fields of exploration

¹ Notes presented to the Princeton Psychological Seminar in May, 1895, slightly revised.

altogether. They try to overcome the 'mereness' by making it an incident of a larger fullness: and the 'implications' of the thing, the 'meaning' of it 'in a system'—this shows up the mereness, both in its own insignificance and in its fruitful connection with what is universal.

So we may safely say of the idealist, that if he get a doctrine of a 'thing,' it must, he will himself admit, not be of such a thing that it cannot take on the particular form of behavior which the one 'mere thing' under examination is showing at the moment. There must, in short, be no contradiction between the 'real thing' and the special instance of it which is found in the 'mere thing.'

He, the idealist, therefore, is first of all a phenomenist in getting his doctrine of the real; the 'what' must be, when empirically considered, in some way an outburst of behavior.

Now the idealist is the only man, I think, of whom there is any doubt in the matter of this doctrine of behavior, except the natural realist, who comes up later. Others hold it as a postulate since Lotze, and later Bradley, did so conclusively show the absurdity of the older uncritical view which held, in some form or another, what I may call the 'lump' theory of reality. A thing can not be simply a lump. Even in matter—so we are now taught by the physicists—there are no lumps. To make a thing a lump—not to cite other objections to it—would be to make it impossible that we should know it as a thing. So all those doctrines which I have classed as other than idealistic accept, and have an interest in defending, the view that the reality of a thing is presented in its behavior.

So setting that down as the first answer to the 'what' question, we may profitably expand it a little. The more we know of behavior of a certain kind, then the more we know of reality, or of the reality, at least, which that kind of behavior is. And it is evident that we may know more of behavior in two ways. We may know more of behavior because we take in more of it at once; this depends on the basis of knowledge we already have—the relative advance of science in description, explanation, etc., upon which our interpretation of the behavior before us rests. In the behavior of a

bird which flits before him, a child sees only a bright object in motion; that is the 'thing' to him. But when the bird flits before a naturalist, he sees a thing whose behavior exhausts about all that is known of the natural sciences. Yet in the two cases there is the 'thing,' in just about the same sense.

When we come, farther, to approach a new thing, we endeavor, in order to know what it is, to find out what it is doing, or what it can do in any artificial circumstances which we may devise. Just as far as it does nothing, or as far as we are unable to get it to do anything, just so far we confess ignorance of what it is. We can neither summon to the understanding of it what we have found out about the behaviour of other things, nor can we make a new class of realities or things to put it in. All analysis is just the finding out of the different centers of behavior which a whole given outburst includes. And the whole, if unanalyzable to any degree, is itself a thing, rather than a collection of things.

But the second aspect of a thing's reality is just as important. Behavior means in some way change. Our lump would remain a lump, and never become a thing, if, to adhere to our phenomenal way of speaking, it did not pass through a series of changes. A thing must have a career; and the length of its career is of immediate interest. We get to know the thing not only by the amount of its behavior, secured by examining a cross-section, so to speak, but also by the increase in the number of these sections which we are able to secure. The successive stages of behavior are necessary in order really to see what the behavior is. This fact underlies the whole series of determinations which ordinarily characterize things, such as cause, change, growth, development, etc., as comes out farther below.

The strict adherence to the definition of a thing in terms of behavior, therefore, would seem to require that we waited for the changes in any case to go through a part at least of their progress—for the career to be unrolled, that is, at least in part. Immediate description gives, as far as it is truly immediate, no science, no real thing with any richness of content; it gives merely the snap-object of the child. And

if this is true of science, of every-day knowledge of things, to live by, how much more of the complete knowledge of things desiderated by philosophy? It would be an interesting task to show that each general aspect of the 'what' in nature has arisen upon just such an interpretation of the salient aspects presented in the career of individual things in nature. But this would be to write a large and most difficult chapter of genetic philosophy.

Our second point in regard to the 'what,' therefore, is that any 'what' whatever is in large measure made up of judgments based upon experiences of the 'how.' The fundamental concepts of philosophy reflect these categories of origin, both in their application to individuals—to the 'mere thing'—and also in the interpretation which they have a right to claim: for they are our mental ways of dealing with what is 'mere' on one hand and of the final reading of reality which philosophy makes its method. Of course the question may be asked: How far, origin? That is, how far back in the career of the thing it is necessary to go to call the halting-place 'origin.' This we may well return to lower down; the point here is that origin is always a reading of part of the very career which is the content of the concept of the nature of the thing.

Coming now closer to particular instances of the 'what,' and selecting the most refractory case that there is in the world, let us ask these questions concerning the *mind*. I select this case because, in the first place, it is the case urgently pressing upon us; and, second, because it is the case in which there seems to be, if anywhere, a gaping distinction between the 'what' and the 'how.' Modern evolution claims to discuss the 'how' only, not to concern itself with the 'what;' or, again, it claims to solve the 'what' entirely by its theory of the 'how.' To these claims what shall we say?

From our preceding remarks it seems evident that the nature of mind is its behavior generalized; and, further, that this generalization necessarily implicates more or less of the history of mind; that is, more or less of the career which

discloses the 'how' of mind. What further can be said of it as a particular instance of reality?

A most striking fact comes up immediately, when we begin to consider mental and with it biological reality. The fact of growth, or to put the fact on its widest footing, the fact of *organisation*. The changes in the external world which constitute the career of a thing, and so show forth its claim to be considered a thing, fall under some very wide generalizations, such as those of chemistry, mechanics, etc.; and when the examination of the thing's behavior has secured its description under these principles in a pretty exhaustive way, we say the thing is understood. But the things of life, and the series of so-called organic changes which unroll its career, are not yet so broadly statable. When we come to mind, again, we find certain pretty well made out generalizations of its behavior. But here, as in the case of life, the men who know most have not a shadow of the complacency with which the physicist and the chemist categorize their material. It is for this reason, I think, in part, that the difference between the two cases gets its emphasis, and the antithesis between origin and nature seems so necessary in one case while it is never raised in the other. For who ever heard a natural science man say that the resolution of a chemical compound into its elements, thus demonstrating the elements and law of the origin of the 'thing' analyzed, did not solve the question of its nature, as far as science can state a solution of that question?

But we can not say that the whole difference is one of greater modesty on the part of the psychologists. The facts rather account for their modesty. And the prime fact is one formulated in more or less obscurity by many men, beginning with Aristotle: the fact, namely, that organization considered as itself a category of reality never reaches universal statement in experience. To confine the case at first to vital phenomena, we may say that to subsume a plant or animal under the category of organization is to make it at once to a degree an X: a form of reality which, by right of this very subsumption, predicts for itself a phase of behavior as yet unaccomplished—gives a prophecy of more career, as a fact,

but gives no prophecy (apart from other information which we may have) of the new phase of career in kind. Every vital organization has part of its career yet to run. If it has no more career yet to run, it is no longer an organization: it is then dead. It then gets its reality exhausted by the predication of the categories of chemistry, mechanics, etc., which construe all careers retrospectively. A factor of the biological and mental categories alike is just this element of what I have called elsewhere 'Prospective Reference.'¹ In biology it is the fact of 'Accommodation:' in psychology it is the same fact found in all cases of Selection—most acute in Volition.

And it does not matter how the content in any particular filling up of the category may be construed after it takes on the form of accomplished fact—after, *i. e.*, it becomes a matter of 'retrospect.' All constructions in terms of content mean the substitution of the retrospective categories for those of prospect; that is, the construction of an organization after it is dead, or—what amounts to the same thing—by analogy with other organizations which have run down, or died, in our experience. Suppose, for example, we take the construction of the category of Accommodation, in each particular instance of it, in terms of the ordinary biological law of natural selection—an attempt made by the present writer under the statement of so-called 'Organic Selection'²—and so get a statement of how an organism actually got any one of the special adaptations of its mature personal life. What, then, have we done? I think it is evident that we have simply resorted to the 'retrospective' reference; we have changed our category in the attempt to get a concrete filling for a particular case *after it has happened*. To adopt the view that the category of organization can be in every case filled up with matter, in this way, does not in any sense destroy the prospective element in the category of organization; for the psychological subtlety still remains in mind in the

¹See my *Mental Development: Methods and Processes* (Macmillan & Co.), Chaps. VII, XI.

²In accordance with which the organism's new accommodations are selected out of movements excessively produced under pleasure-pain stimulation. *Ibid.* pp. 174 f.

doing of it, either that the event must be awaited to determine the outcome, and that I am agreeing with myself and my scientific friends to wait for it, or that we are solving this case by others for which we did wait. A good instance of our mental subtleties in such cases is seen in the category of 'potentiality,' considered lower down. The extreme case of the reduction of the categories of prospective reference to those of retrospect, is evidently the formula for probabilities. I do not see how that formula can escape being considered a category of retrospect, applied to material which does not admit of any narrower or more special retrospective formulation.

Now the inference from this is that our predicate 'reality,' in certain cases, is not adequately expressed in terms of the experienced behavior of so-called real content. The very experience on the basis of which we are wont to predicate reality testifies to its own inadequacy. I see no way to avoid the alternatives that either the notion of reality does not rest upon experiences of behavior, or that the problematic judgments based upon those experiences of progressive organization which we know currently under the term development, are as fundamental to these kinds of reality as are those more static judgments based on history or origin.

It may be well, in view of the importance of this conclusion, to see something more of its bearings in philosophy. The historical theories of design, or teleology in nature, have involved this question. And those familiar with the details of the design arguments pro and con will not need to have brought to mind the confusion which has arisen from the mixing up of the 'prospective' and 'retrospective' points of view. Design, to the mind of many of the older theistic writers, was based upon relative unpredictability—or better, infinite improbability. Such an argument looks forward: it is reasoning in the category of organization, but under the 'prospective' reference. The organization called mental must be appealed to. What, was asked, is the probability of the letters of the Iliad falling together so as to read out the Iliad? The opponents, on the other hand, have said: Why is not the Iliad combination as natural as any other?

One combination has to happen; what is to prevent this? If a child who cannot read should throw the letters, the Iliad combination is no more strange to him than any other. These men are reasoning in the retrospective categories. They are interpreting facts. The fault of the latter position is that it fails to see in reality the element of higher organization which the whole series when looked at from the point of view of the real Iliad requires. What would really happen, if the child should throw the Iliad combination, would be that nature had produced a second time a combination once before produced (in the mind of Homer, and through him in ours) without fulfilling all the other combinations—an infinite number—which have a right to be fulfilled before the Iliad combination be reproduced. But this added element of organization needed to bring nature into accord with thought and which the postulate of design makes in reaching a Designer—this is not needed from the mere historical or retrospective examination of the facts. In other words, if the opponents of design are right in holding to a complete reduction of organization to retrospective categories, they ought to be able to say just as definitely that the Iliad combination will happen in a certain number of throws, as they are to say afterwards that it has happened.

The later arguments for design, therefore, which tend to identify it with organization, and to see in it, so far as it differs from natural law, simply a harking forward to that career of things which is not yet unrolled, but which when completely unrolled will be a part of the final statement of origins in terms of natural law—this general view has the justification of as much criticism as has now been stated.

And, further, it is clear that the two opposed views of adaptation in nature are both genetic views—instead of being, as is sometimes thought, one genetic (that view which interprets the adaptation after it has occurred), and the other analytic or intuitive (that view which seeks a beforehand construction of design). The former of these is usually accredited to the evolution theory; and properly so, seeing that the evolutionist constantly looks backward. But the other view, the design view, is equally genetic. For

the category of higher or mental organization by which it proceeds is just as distinctly an outcome of the movement or drift of experience toward an interpretation of career in terms of history. Teleology, then, when brought to its stronghold, is a genetic outcome, and owes what force it has to the very point of view that its most fervent advocates—especially its theological advocates—are in the habit of running down. The consideration of the stream of genetic history itself, no less than the attempt to explain the progress of the world as a whole, its career, leads us to admit that the real need of thinking of the future in terms of organization is as great as the need of thinking of the past in terms of natural law. The need of so-called mental organization or design is found in the inadequacy of natural law to explain the further career of the world, and its past career also, as soon as we go back to any place in the past and ask the same question there. It would be possible, also, to take up the last remark for more thought, and to make out a case for the proposition that the categories of 'retrospective' thinking also involve a strain of organization—a proposition which is equivalent to one which the idealists are forcibly urging from other grounds and from another point of view. Lotze's argument to an organization at the bottom of natural causation has lost nothing of its power. Viewed as a category of experience, I am unable to see the force of the assumption tacitly made by the Positivists, and as tacitly admitted by their antagonists, that causation is to be ultimately viewed entirely under such retrospective constructions as 'conservation of energy,' etc. Such constructions involve an endless retrospective series. And that is to say that the problem of origin is finally insoluble. Well, so it may be. But yet one may ask why this emphasis of the 'retrospective,' which has arisen in experience with just the basis of experience that the 'prospective' also has? It may be a matter of taste; it may be a matter of 'original sin.' But if we go on to try to unite our categories of experience in some kind of a broader logical category, the notion of the Ultimate must, it would seem, require both of the aspects which our conception of reality includes; the 'prospective' no less than the 'retro-

spective.' Origins must take place continually as truly as must sufficient reasons. The only way to avoid this is to say that reality has neither forward nor backward reference. So say the idealists in getting thought which is not in time. But be that as it may, we are dealing with experience—though for myself, I must say, thought which looks neither backward nor forward is no thought at all.

Another subtlety might raise its head in the inquiry whether in their origin all the categories did not have their 'natural history.' If so, it might be said, we are bound, in the very fact of thinking at all, to give exclusive recognition to the historical aspect of reality. But here is just the question: does the outcome of career to date give exhaustive statement of the idea of the career as a whole? There would seem to be two valid objections to it. First, it would be, even from the strictly objective point of view, the point of view of physical science, to construe the thing mind entirely in terms of the behavior of its stages antecedent to the present: that is entirely in terms of descriptive content, by use of the categories of retrospective interpretation. And, second, it does not follow that because a mental way of regarding the world is itself a genetic growth, therefore it is an illusory way. Let me explain these two points a little.

1. A chemist seemed justified in looking at atmospheric air, as explained by the formula for a mixture of nitrogen and hydrogen, for the reason, and this is his practical test, that the behavior of air confirms that view. His confidence in his statements of history can only be justified on the ground that present history never contradicts it. But as soon as a new experiment showed that new behavior may be different, and may contradict the reports of history, he looks for a new thing, argon—new in the sense, of course, that the historical manifestations of the kind of reality in so-called air had never before brought it to recognition. In other words, the nature of air had been stated in terms of oxygen and nitrogen; but he now sees that the statement founded on what was known of origin—and that is what origin means in all these discussions—was inadequate. This would seem to admit, however, that if the problem of origin could be really exhausted,

that of nature would be exhausted too; and no doubt it would. But it is a corollary from the second point of objection, soon to be made, that the problem of origin can never be exhausted, even by philosophy, without an appeal to other than the historical or retrospective categories.

But before I pass on to the second objection to the position that a thing which is admitted to have had a natural history must have its interpretation adequately given in that history, and that this applies also to the very categories by the use of which its denial is effected—before going farther I may point out an extreme case of the main position as sometimes argued by evolutionists. If, it may be said, the mind has developed under constant stimulations from the external world, and if its progress consists essentially in the more and more adequate representation in consciousness of the relations already existing in the external world, then it follows that these internal representations can never do more than reflect the historical events of experience. Consciousness simply testifies again to the real as it has been testified to her before. How, then, can there be any such thing as a phase of reality not subject to plain statement under natural law?¹

This a very common objection to all thorough-going statements of mental evolution. It rests on the mistaken view, just pointed out, that a statement of the historical career of a thing can ever be an adequate statement of its nature; in other words, that the origin of the categories of thought can tell what these categories will do—what their function and meaning is in the general movement of reality. Consciousness is entitled to a hearing in terms of its behavior solely. Its behavior, attitudes, etc., represented by

¹ It is this supposed necessity that leads Mr. Huxley to hold that evolution cannot explain ethics, *i. e.*, the supposed necessity that the validity of ethical values must be adequately found in the terms of their origin; for, says he, the pursuit of evil would have as much sanction as that of good, for both are in us, and they would have the same origin (*Evol. and Ethics*, esp. p. 31). But to say, as we do, that the appeal made by the word 'ought' is a 'prospective' appeal, as opposed to the description of the 'is,' which is 'retrospective,' does not require us to say that the impulse to recognize either is not a product of evolution. My discussion of Prof. Royce's attempt (*Int. Jour. of Eth.*, July, 1895) to show the psychological origin of the antithesis between 'ought' and 'is,' may be referred to (*Int. Jour. of Eth.*, Oct., 1895).

'prospective' thought are there just as its behavior represented by its history is there. Who would venture to say that consciousness of a relation in nature is in no sense a different mode of behavior from the relation itself in nature? The real point is in what I have already tried to put in evidence: that such a construction involves the assumption that reality in its movement defines all her own changes in advance of their actual happening. The very series of changes which constitute the basis in experience for the growth in consciousness of the category of change are the basis also for the new aspects of reality (say consciousness) which are held to be only a putting in evidence of the relations already existing in nature. If consciousness is no new thing—on our behavior-definition of thing—then knowledge of the historical movement of reality must be not at all different from the movement which has led up to knowledge. The discovery of the principle of evolution, for example, is not a new event added to the fact that the series evolving was there to be discovered!

But I may be even more concrete. I have recently developed a view of mental development which not only makes each stage of it a matter of legitimate natural history, but goes on to say that the one method of motor adaptation is by imitation. What could be a more inviting field for the criticism: imitation is mere repetition. How can anything new come out of imitation? Not only is consciousness merely repeating the relationships already there in nature, but the development of consciousness itself is merely a series of repetitions of its own acts. I have had this criticism already; especially with reference to volition. How, it is asked, can anything new be willed if volition is in its origin only imitation become complex?

I reply in a way to make concrete what has been said immediately above. The counter question may be put: why can not anything new come out of imitations? Why may not the very repetition be the new thing, or the condition of it? To say not is to say that by looking at the former instance, the historical, after its occurrence, you can say that that occurrence fully expressed mental behavior. On the

contrary, the prospective reference gained by the imitation may bring out something new; the repetition may be just what is needed to bring an important stage in the career of mental reality. In itself, of course, an imitation is no more open to the objection we are considering than any other kind of mental behavior; but it seems to be more so, because it emphasizes the very point that the current objection to natural history hits upon, *i. e.*, that it makes the mind only a means of reinstatement of relations already existing in nature, and then makes that the explicit method of mental history.

2. The second answer to the view now being criticised may be put in some such way as this. It does not follow that because a product—one of the categories of organization, such as design, the ethical, &c.—is itself a matter of gradual growth, its application to reality is in any way invalidated. A category must be complete, ready-made, universal, without exceptions, we are told, in order that its application to particular instances be justified. But I fail to see the peculiar and mysterious validity supposed to attach to an intuition because whenever we think by it we allow no exceptions. Modern critiques of belief and modern theories of nervous habit have given us reasons enough for discarding such touch-stones as 'universality' and 'necessity.' And modern investigations into the race development of beliefs have told us how much better an aspect of reality really is because at one time people insisted in thinking in a certain intuitive way about it. The whole trouble, as I think, with the intuitional way of thinking is curiously enough that fallacy which I have pointed out as being a favorite one of the evolutionists. The evolutionists say that an intuition is of no value when construed prospectively, *i. e.*, as applying to what 'must be' beyond 'what is': it gets all its content, and all its force, from experience. Therefore, all reality is to be construed retrospectively, and no 'thing' is possible except as accounted for as an evolution from historical elements. True after things have happened, it nevertheless fails by thinking career all finished. Why may not experience produce in us a category whose meaning is prophetic? On the other hand, here come the intuitionists and oppose the evo-

lutionists in this way. They say: no thing is possible except as in some way evidenced for. The intuitions are universal and necessary. As such their evidence can not be found in experience. To admit that they had developed would be to admit that their evidence could be found in experience. Consequently they carry their own evidence and their own witness is all the evidence they have. The fallacy again is just the assumption that reality is finished, that categories of retrospective reference exhaust the case. That the series of events which are sufficient ground for the origin of the category should also be sufficient evidence of its validity. That there is a sharp contradiction, therefore, between a doctrine of derivation from experience (which is inadequate as evidence) and application beyond experience. But when we come to see that the categories of prospective thought are equally entitled to application with those of retrospect, we destroy the weapon of evolution to hurt the validity of mental utterances, and at the same time knock out the props upon which the intuitionist has rested his case.

The case stands with mental facts, to sum up, just about as it does with all other facts. An event in nature stays what it is until it changes. So with an event or a belief or any other thing in the mind of the race. It stays what it is until it has to change. Its change, however, is just as much an element in reality as lack of change is; and the weakening of a belief like any other change is the introduction of new phases of reality. A doctrine which holds to intuitions which admit of no prospective exceptions, no novelties, seems to me to commit suicide by handing the whole case over to a mechanical philosophy; for it admits that all validity whatever must be cut from cloth woven out of the historical and descriptive sequences of the mind's origin.

Our conclusions so far may be summed up tentatively in certain propositions as follows:

1. All statements of the nature of a 'thing' get their matter mainly from the processes which they have been known to pass through: that is, statements of nature are for the most part statements of origin.
2. The statements of origin, however, never exhaust the

reality of a thing; since such statements cannot be true to the experiences which they state unless they construe the reality not only as a thing which has had a career but also as one which is about to have a career: for the expectation of the future career rests upon the same historical series as the belief in the past career.

3. All attempts to rule out prospective organization or teleology from the world would be fatal to natural science, which has arisen by provisional interpretations of just this kind of organization: and also to the historical interpretation of the world found in the evolution hypothesis; for the category of teleology is but the prospective reading of the same series which, when read retrospectively, we call evolution.

4. The fact of natural history of any thing, and more especially of mental products, ideas, intuitions, &c., is no argument against its validity or worth as having application beyond the details of its own history; since, if so, then a natural history series can produce nothing new. But that is to deny the existence of the fact or idea itself, for it is a new thing in the series in which it arises.

5. All these points may be held together in a view which gives each mental content a two-fold value in the active life. Each such content begets two attitudes by its function as a genetic factor in the progressive development of the individual. As far as it fulfils earlier habits it begets and confirms the historical or retrospective attitude, as far as it is not entirely exhausted in the channels of habit, so far it begets the expectant or prospective attitude.

There are one or two points among many suggested by the foregoing which it may be well to refer to—selected because uppermost in my own mind. It will be remembered that in speaking of the categories of organization as having prospective reference, I adduced instances largely drawn from the phenomena of life and mind, contrasting them somewhat strongly with those of chemistry, physics, &c. The use afterwards made of these categories now warrants us in turning upon that distinction, in order to see whether our main results hold for the aspects of reality with which these sciences deal as well. I have intimated above in passing that

the other categories of reality, such as causation, mechanism, are really capable of a similar evaluation as that given to teleology. This possibility may be put in a little stronger light.

It is evident, when we come to think of it, that all organization in the world must rest ultimately on the same basis; and the recognition of this is the strength of thorough-going naturalism and absolute idealism alike. The justification of the view is to be made out, it seems to me, by detailed investigation of the genetic development of the categories. The way the child reaches his notion of causation, for example, or that of personality, is evidence of the way we are to consider the great corresponding *race-categories* of thought to have been reached: and the category of causation is, equally with that of personality, or that of design, a category of organization. The reason that causation is considered a cast-iron thing, implicit in nature in the form of 'conservation of energy,' &c., is that in the growth of the rubrics of thought certain great differentiations have been made in experience according to observed aspects of behavior; and those events which exhibited the more definite, invariable aspects of behavior have been put aside by themselves; not of course by a conscious convention of man's, but by the conventions of the organism working under the very method which we come—when we make it consciously conventional—to call this very category of organization. What is conservation but a kind of organization looked at retrospectively and conventionally? Does it not hold simply because my organism has made the convention that only that class of experiences which are 'objective' and regular and habitual to me shall be treated together, and so shall give rise to such a regular mental construction on my part?

But the tendency to make all experience liable to this kind of causation is an attempt to undo nature's convention—to accept one of her results, which exists only in view of a certain differentiation of the aspects of reality, and apply this universally, to the subversion of the very differentiation on the basis of which it has arisen. The fact that there is a class of experiences whose behavior issues in such a purely

historical statement and arouses in me such a purely habitual attitude, is itself witness to a larger organization—that of the richer consciousness of expectation, volition, prophecy. Otherwise conservation could never have got for itself abstract statement in thought.

The reason that the category of causation has assumed its show of importance, is just that which intuitionist thinkers urge; and another historical example of confusion due to their use of it may be used for illustration. Causation is about as universal a thing—in its application to certain aspects of reality—as could be desired. And we find the men of this school using this fact to reach a certain statement of theism. But they then find a category of 'freedom' claiming the dignity of an intuition also; and although this comes directly in conflict with the uniformity ascribed to the other, nevertheless it also is used to support the same theistic conclusion. The two arguments read: (1) an intelligent God exists because the intelligence in the world must have an adequate cause, and (2) an intelligent God exists because the consciousness of freedom is sufficient evidence of a self-active principle in the world, which is not caused. All we have to say, in order to avoid the difficulty, is that any mental fact is an 'intuition' in reference only to its own content of experience. Intelligence viewed as a natural fact, *i. e.*, retrospectively, has a cause: but freedom in its meaning in reality, *i. e.*, with its prospective outlook, is prophetic of novelties—is not adequately construed in terms of history. So both can be held to be valid, but only by denying universality to both 'intuitions' and confining each to its sphere and peculiar reference in the make up of reality.

Another thing to be referred to in this rough discussion concerns the more precise definition of 'origin.' How much of a thing's career belongs to its origin? How far back must we go to come to origin?

Up to this point I have used the word with a meaning which is very wide. Without trying to find a division of a thing's behavior into the present of it as distinguished from its history; I have rather distinguished the two attitudes of mind engendered by the contemplation of a thing, *i. e.*, the

'retrospective' attitude and the 'prospective' attitude. When we come to ask for any real division between origin and present existence we have to ask what a thing's present value is. In answer to that we have to say that its present value resides very largely in what we expect it to do; and then it occurs to us that what we expect it to do is no more or less than what it has done. So our idea of what is, as was said above, gets its content from what has been. But that is to enquire into its history, or to ask for a fuller or less full statement of its origin or career. So the question before us seems to resolve itself into the task of finding somewhere in a thing's history a line which divides its career up to the present into two parts; one properly described as origin, and the other not. Now, on the view of the naturalist pure and simple there can be no such line. For the attempt to construe a thing entirely in terms of history, entirely in the retrospective categories, would make it impossible for him to stop at any point and say 'this far back is nature and farther back is origin'; for at that point the question might be asked of him 'what is the content of the career which describe the thing's origin?'—and he would have to reply in exactly the same way that he did if we asked him the same question regarding the thing's nature at that point. He would have to say that the origin of the thing observed later was described by career up to that point; and is not that exactly the reply he would give if we asked him what the thing was which then was? So to get any reply to the question of the origin of one thing different from that to the question of the nature of an earlier thing, he would have to go still farther back. But this would only repeat his difficulty. So he would never be able to distinguish between origin and nature except as different terms for describing different sections of one continuous series of aspects of behavior. This dilemma holds also, I think, in the case of the intuitionist. For as far as he denies the natural history view of origins and so escapes the development above he holds to special creation by an intelligent Deity; but to get content to his thought of Deity he resorts to what he knows of mental behavior. The nature of mind then supplies the thought of the origin of mind.

To those who do not shut themselves up, however, to the construction of things in the categories of realized fact, of history, of 'retrospect,' the question of origin is a fruitful one apart from the statement of nature. For at any stage in the career of a thing the two methods of thought are equally applicable. When we ask how a thing originated, we transport ourselves back to a point in its career at which the 'prospective' categories got a filling not *at that stage* already expressed in the content of history. The overplus of behavior is said to have its origin then, even though afterwards the outcome be statable in the categories of retrospect which have *then been widened by this event*. For example, volition originates in the child at the point of its life at which certain conscious experiences issue out of old content, experiences which were not previously there, to the child, in whatever complications of content were there. But once arisen, the experience can be construed as a continuation of the series of events which make up mental history. To the Positivist and to the Intuitionist a sensational account of the genesis of volition, and to the intellectual Idealist an ideological account of it, rule volition out of reality just by the fallacy of thinking exclusively in retrospect; but the truth is to say "granted either account of its origin, it leaves philosophy still to construe it: for if we estimate volition from facts true before volition arose, the sources do not fully describe it; and if we wait to view it after it arises, then the full statement of career must include the widened aspects of behavior which the facts of volition afford."¹

It is interesting also to note, as another case of application of this general distinction between the mental habits represented respectively by the terms 'prospective' and 'retrospective,' that it gives us some suggestions concerning the very obscure concept called potency or potentiality. This *soi-disant* concept or notion has been used by almost every conceivable shade of thought as the repository of that which is unexplained. Aristotle started the pursuit of this

¹ In the last number (Sept, 1895) of this REVIEW I criticised Professor Watson's view that the Absolute can be exhausted by our thought, *i. e.*, can be adequately expressed in terms of the organizations of content already effected.

notion and used it in a way which shed much light, it is true, upon the questions of philosophy concerned with change and organization; but his failure to give any analysis of the concept itself has been an example ever since to lesser men. It is astonishing that, with all the metaphysics of causation which the history of philosophy shows, there has been—that is to my knowledge—no thorough-going attempt to trace the psychological meaning of this category. How common it is to hear the expression, 'this thing exists, not actually, but potentially,' given as the end of debate, and accepted, too, as the end. I do not care to go now into a historical note on the doctrine of potentiality; it would be indeed mainly an exposition of a chapter of Aristotle's metaphysics with the refinements on Aristotle due to the logic of the schoolmen and the dogmatic of modern theology. It may suffice to say something of the natural history of the distinction between potential and real existence in the light of the positions now taken.

In brief, then, there are two aspects as we have seen under which reality must in all cases be viewed—the prospective and the retrospective. The retrospective, as has been said, is the summing up of the history which gives positive content to the notion of a thing considered as accomplished career. This aspect, it seems clear, is what is in view when we speak of real existence in contrast with potential existence. It is not indeed adequately rendered by the content supplied by retrospect, since the fact that the two predicates are held in mind together as both together applicable to any concrete developing thing, forbids us to construe real existence altogether apart from the fact that it has a farther issue in farther career. It is a great merit of Aristotle that he forbade just this attempt to consider the *dunamis* apart from the *energeia*. But, nevertheless, it is true psychologically that real existence is exhausted as a content-predicate with the backward aspect of the series of changes which give body to reality.

And it seems equally evident at first blush that potential existence is equally concerned with the prospective reference of the thought of things. That this is so is perhaps the one element in the notion of potency that all who use the word

would agree upon. But this is inadequate as a description of the category of potentiality. For if that were all, how would it differ from any other thought of the prospective? We may think of the future career of a thing simple in terms of time; that, we would probably agree, does not involve potentiality. A particular potency is confined to a particular thing, *i. e.*, to a particular series of events making up a more or less isolated career. If only the bare fact of futurity were involved, why should not any new unrolling of career be the potency of any thing indiscriminately?

This leads us to see that potency or potentiality, even when used in the abstract, is never free from its concrete reference. And this concrete reference is not that of conception in general, only or mainly; the concrete reference of conception generally is a matter of retrospect, *i. e.*, of the application of the concept to individual things, as far as such application has been justified by historical instances. Indeed, it is the very occurrence of the historical instances which has given rise to the concept, and it generalizes them.

So when we put ourselves at the point of view of the concrete, we have to ask what is actually meant by us when we say a thing exists potentially, over and above the mere meaning that the thing is to exist in the future. We have seen that one added element of meaning is that the thing which is to exist in the future is in some way tied down in its manifestations to something that already exists actually; it must be the potentiality of some one thing in order to be a potentiality at all. Now, how can this be?

Of course the ordinary answer is at once on our lips: the answer that the bond between the thing that is and the thing that is to be is the bond of causation. The potentiality is the unexpressed causal efficacy of the thing that is. But when we come to ask what this means, we find that we are hiding behind one of the screens of common sense. The very fact of cause, whatever bond it may represent from an ontological point of view, is at least a fact of career. The effect is a further statement of the career of the thing called the cause. Now, to say that the potency of a thing is its unexpressed causal power, is only to say that the thing has

not finished its career, and that is a part of the general notion of a thing. That fact alone does not in any way define the future career for us, except in the way of repetition of past career. We merely expect the thing to do what it has done before; not to become some new thing out of the old. In short, the category of causation is not adequate, since it construes all career retrospectively.

We have, therefore, two positions so far, saying (1) that every potency is the potency of a thing, and this means that it gets its content in some way from the historical series which that thing embodies; but (2) that it is something more than a restatement of any or all of the elements of the series thus embodied. Now, what else is there?

The remaining element in the category of potentiality involves, I think, a very subtle movement of the mind along the same distinction of the prospective from the retrospective. Briefly, the potentiality which I ascribe to a thing is my general expectation of more career in reference to it, with the added sense, based on the combined experiences of mine that the prospective does get a retrospective filling after it has happened, that the new career of the thing to which I ascribe the potency, although not yet unfolded, will likewise be capable of retrospective interpretation as further statement of the one series which now defines the thing.

In short, there are three elements or phases of consciousness in this matter: first, let us say, the general prospective element, the expectation that something will happen; second, the causation or retrospective element, the expectation that when it has happened it will be a consistent part of the history of the thing; and, third, the conscious setting back of my observation to the dividing line between these two points of view, and the contemplation of the thing under both of them—both as a present thing, and as a thing for what it will be when the future becomes present.

For example: I say that a tree expresses the potency or potentiality of the seed. This means three very concrete things. I expect the seed to have a future; I expect the future to be a tree—that is, a thing whose descriptive series is continuous with that already descriptive of the seed—and,

finally, I now look upon the seed as embodying the whole tree series now artificially present in my thought.

Of course, on the view of this paper the question of the ultimate origin of the universe may still come up for answer. Can there be an ultimate stopping-place anywhere in the career of the thing-world as a whole? Does not our position make it necessary that at any such stopping-place there should be some kind of filling drawn from yet antecedent history to give our statement of the conditions of origin any distinguishing character? It seems to me so. To say the contrary would be to do in favor of the prospective categories what we have been denying the right of the naturalist to do in favor if those of retrospect. Neither can proceed without the other. The only way to treat the problem of ultimate origin is not to ask it, as an isolated problem. Lotze says that the problem of philosophy is to require what reality is, not how it is made; and this will do if we remember that we must exhaust the empirical 'how' to get a notion of the empirical 'what,' and that there still remains over the 'prospect' which the same author has hit off in his famous saying, 'Reality is richer than thought.' To desiderate a what which has no how—this seems as contradictory as to ask for a how in terms of what is not. It is really this last chase of the 'how' that Lotze deprecates—and rightly.

Addenda. (1) *Further applications:* to the discussion of *freedom*; to the discussion of *ideals*; criticism of the general concept of *law* from this point of view; applications in *ethics* (*cf.* with Royce's distinction vs. 'world of description' and 'world of appreciation'); question of the notion of time (*i. e.*, is the distinction between the 'prospective' and 'retrospective' merely one of time, or does the notion of time find its genesis in this difference of mental attitude?)

(2) *References:* Ritchie, *Darwin and Hegel*, Chap. I; Royce, *Spirit of Modern Philosophy*, *in loc.* and *Int. Journ. of Ethics*, July 1895; Baldwin, *Mental Development: Methods and Processes*, Chaps. VII, XI, and *Int. Journ. of Ethics*, Oct. 1895.

SOME OBSERVATIONS ON THE ANOMALIES OF SELF-CONSCIOUSNESS.

(II.)

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I spent some months, a few years since, in pretty frequent and close intercourse with a young man who, though then certainly unknown in his inner life to any medical man, was a pretty highly pathological instance of the more metaphysical type of the malady of self-consciousness. He came for counsel as a young genius, willing to let me read endless manuscript productions of his own, including his diaries, which I was permitted to examine. He was disposed to get some advice about his intended career as a poet, as man of free soul, and as independent person generally. He was a man of twenty-four, in easy circumstances, uncontrolled by his parents, of fairly robust physical appearance, and, so far as I could guess, of generally good vegetative health—a man who had certainly so far been able to bear, without much physical inconvenience, the strain of a good deal of dissipation. No serious illnesses were admitted in his past since childhood. His appetite and sleep were reported as good; his emotional undertone, however hard you tested him, was one of pretty steady cheerfulness, even in the midst of his greatest perplexities; his social manners were gentle, and on the whole rather feminine in their kindliness, their plasticity, their somewhat girlish type of half-timid vanity. His friends had long regarded him as an extraordinary person, possibly a genius, certainly a puzzle. At school he had done well, especially in such writing as he printed in school journals; had won a really skilful control over several forms of verse, had tried his hand at romantic prose with fluency, and had always shown a good deal of artistic sensibility. Mentally he still retained a rich element of true naïveté about

him, despite his maladies. He had an intense though romantically vague love of nature, of living creatures, of young children, of tender and sweet things generally, and this fondness again was often expressed with a relatively feminine enthusiasm and simplicity.

But now, on the basis of this child-like and so far keenly suggestible nature, with its sensitive but physically vigorous *naïveté*, there was superimposed a second nature, colored, and partly determined, apparently, by the inherited bent and the acquired habits of his sexual life. The latter had gradually become a life of excesses and of pronounced and openly defended libertinism. His disorders in this respect were reinforced by considerable capriciously irregular drinking, by many cigarettes, and by much strong coffee. As to all these habits, my charge was absolutely stubborn, had no moments of repentance, never was suggestible, in this region of his life, and occasionally became, if reasoned with upon such topics, strangely brutal in tone, especially in letters which he wrote to me, and which contrasted singularly with his gentleness when in my company, and with the almost uniform suggestibility of his moods whenever we talked together. These incidents of what proved to be a decidedly pathological love of excitement were, however, not the most immediate of the symptoms of mental disturbance. At all events the dissipations were not the mere overflow of a wastefully vigorous physical nature. They were, as it proved, the accompaniments of a highly ominous eccentricity of general mental temperament. My charge had already shown, in writings produced in his later boyhood, and submitted to me amongst the rest, a strong tendency to a partially incoherent wealth of half automatic trains of words, images, and ideas. This trait remained in him during the time when I knew him, and, while it was plainly made worse by his excesses, I could not at all refer its origin to these habits. For the elements of the process were all present in his writings at fifteen years of age, while his physical habits were of recent growth. The trait never showed itself in his speech in any such form as in his writings. His set compositions at school, and in school papers, failed to show his defects.

But they were manifest in all that he wrote for himself. It was when he was alone that the impulse to this half-automatic thinking, imaging, dreaming, and writing would seize him. Then came processes whose character was decidedly marked, and very often repeated. A wholly imaginary scene or situation, usually represented in pretty vivid visual terms, would come to mind, and my charge would begin to weave a story about this scene, or to elaborate the matter in a poem or to write an essay. From the outset this scene or situation would seem to the man himself, however, not the mere beginning of a possible train of voluntary production, but an insistent significant *symbol* of something pretty mysterious, and very vague; and his process of composition was always an effort *to find out what the symbol meant*. The sincerity of this inner attitude towards his symbolic images I had occasion to test in many ways, and I became very sure of the genuineness of my subject's expressions as to this matter. He had, to be sure, as yet, no trace of any system of interpretation, and no actual delusions as to the real existence of any definite kind of wisdom to be gained in this way. But the inner questions: What does this symbol mean? What is this that has come to me? How can I find out what I mean by this idea?—these were at such times simply insistent questions, and they forced upon the subject a perplexing and fascinating sort of brooding, which filled up altogether too much of his life when alone, and, at the time when I knew him, determined a very busy activity of literary composition. The symbols varied very widely from time to time, both as to content and as to kind of significance. Now they were romantic situations, involving forests, ruined castles, mysterious mansions, lonely streams. Now they seemed to be of a more purely metaphysical implication. The result of the appearance of such a symbol might be some hours of silent brooding, or of half-automatic writing, which was carried on with a strong sense of combined delight and puzzle, with a good many marked but capricious changes of bodily sensations—flushings and other physical excitements of various content, which were often carefully noted as the man wrote. The result was never a solution

of the puzzle; on the contrary the tangle was always increased, until the subject abandoned his case in weariness. The most of his actually completed compositions were short poems, seldom or never free from some marked defects of form, but occasionally decidedly skilful, and, in some instances, remarkably coherent, and even, in themselves, promising. Here my subject's wide reading, and his sense for verse forms helped him, although again the influence of Walt Whitman was often disastrous. But the poems never solved his problems. On the other hand his prose remained, at the time when I knew him, always fragmentary. It was devoted to the symbols, and was consequently hopelessly formless, often degenerating in various places with the most frankly avowed incoherence. At such moments the writer would plainly say that he was dealing with the inexpressible, and must simply do what he could. The composition of this prose was dominated by the aforesaid ominous and uncontrollable automatism of associative processes. Images, self-analysis, new puzzles, occasionally new symbols, trooped in masses. The writer could only look on, and report his inspirations. To be sure, he never quite lost track of his original inquiry, and often returned afresh to his starting point, in such a way as to show clearly the insistence of his dominating question. But the story, or essay, or analysis, or confession, to which the symbol gave rise, was a chaos of uselessly recorded broodings, as far beyond rationally definite control as were his often lively dreams when really asleep. Characteristic of the case it was however that the steady sense of wonder and perplexity never left him in all this composition, and this alone gave to his papers any genuine unity, and saved them from being a mere record of a flight of ideas. They had no result; but they always had their precisely defined purpose, viz., to solve the mystery of the meaning of this symbol.

But my subject did not live altogether alone. His dissipations were carried on in company, and this company included many people. And now appeared the other side of his case. His social sensitiveness, influenced, as I judged, by his strongly sensuous nature, was as remarkable as were

his automatic processes. In conversation, I have said, he was kindly and suggestible. His sense of perplexity seldom wholly left him, and often made him converse in a curiously broken and fragmentary way, with some of the confusedness, although never with the automatic wealth, of his writings. But apart from this, his social sensitiveness showed itself in the form of an endless series of somewhat feminine, and seldom ungraceful poses. He assumed various attitudes, expressed various moods, ideals, aims, according as the conversation led him. He himself complained sometimes of an inner sense of insincerity in these poses; while the latter actually had the same kind of automatic insincerity that one notes in the dramatic attitudes of many of those more or less hysterically disposed women, who, when in company, are not merely normally plastic, but are even fatally at the mercy of the now suggested conversational mood or bearing or impersonation. To be sure, my subject, at his worst, never had so wide a range of poses as such a hysterically disposed woman would have, but was constantly limited by his insistent inner wonder as to why he was doing and saying all these things, when probably he meant none of them. Here then was a second source of confusedness in his life. To one who saw as much of bad company as this man, and who also sought out many other kinds of company, this automatic suggestibility was likely to prove almost as disorganizing as were his stubborn lonely broodings.

To complete the picture one has only to note that my subject's social sensitiveness especially showed itself in the form of certain intense and instantaneous impressions which he had concerning people's characters when he first met new acquaintances. These absolutely self-confident seeming intuitions of character phenomena which, as you all doubtless know, are not infrequent as an automatic emotional process in certain sensitive persons, usually took for my subject the characteristic form before described. They were namely, in him, intuitions which appeared as symbols, mysterious, attractive, baffling, like the symbols of his lonely broodings. Only these symbols of characters came to him as reflexes whenever he first met some person who chanced to attract

his notice. At the sight of such a person there at once flashed into his mind the symbol—a scene, a typical mythical act which this person was at once visualized as doing, or again, a wholly mysterious inanimate object, or the inner vision another person, apparently very unlike this one. The symbol came with the feeling: ‘This means what, at heart, this new acquaintance truly is.’ But meanwhile came also the insistent question: ‘What does this symbol mean?’ For the symbol was seldom or never one of any sure meaning at all. Only, as my subject told me, whatever he later came to learn of the new acquaintance’s character, always got assimilated to the symbol, and served to confirm or to explain it. The symbol thus, of course, never turned out to be inapplicable. But in further intercourse my subject always watched with insistent eagerness for every clue that the new acquaintance gave of his true personality. My subject consequently loved to stare, with a characteristic intentness, at people’s faces and movements. This broodingly curious stare he tried, because of his social geniality, to conceal, and further, his frequently puzzled self-absorption combined with other motives to give his facial play and his gestures, when in company, a singularly unequal and inconsistent seeming. Now he looked down long and steadily, with a puzzled smile, at his hands; now he glanced up slyly and timidly as he talked; now giving way to his curiosity about character-study, he stared at you eagerly with an expression of rapt absorption, and again assuming one of the aforesaid dramatic poses, he gave himself over to the momentary mood, and acted more or less completely in character, often adding the observation that he doubted his own sincerity all the while. But of the sincerity of the experiences with the character-symbols there could be no doubt. For some of his lengthiest essays were devoted to character-studies founded upon just such symbols, whose possible meanings he developed in the aforesaid formless fashion. The imagery of the symbols often had, for the rest, a suspiciously coarse and cynical content.

Here, then, on the foregoing theory, were the most manifold materials for abnormal habits of self-consciousness:—a

notably variable common sensibility, heightened by the now moderately irritating results of my subject's toxic and other excesses; a large collection of fascinating automatic associative processes, usually felt to be uncontrollable; an inner stubbornness of self-will, inconsistently linked with an excessive social plasticity, which resulted in many poses, also uncontrollable; a collection of socially determined emotional reflexes, which expressed themselves to consciousness in the form of the character-symbols aforesaid, and which led to an absorbing disposition to brood with an ineffective curiosity over the inner life of other people. All this occurred in a brain of more than average although formless wealth of intellectual processes, and in a man of some artistic taste and sensibility, and of considerable, although decidedly irregular, cultivation.

The actual result was a fairly monumental disorder of self-consciousness, which pervaded the man's whole work and life. That, amongst other things, this man for a while played at studying philosophy, you will perhaps find not surprising; but his philosophical study was of the crudest and most fragmentary sort, and served only to give him a few phrases in which to embody his puzzles; and, for the rest, I warned him away from all such studies, so soon as I had fairly made out his condition. For such men as he was philosophy, as I told him, can indeed do only mischief. But whatever his phrases, it was not any serious philosophical reflection, nor any other theoretical motive, that guided him when he brooded over the endless and insistent problem of problems in his life, viz., the question: "Who am I, and what do I really want or mean in this world?" Since he was fifteen years old, as he repeatedly told me, he had simply been waiting, in growing chaos, in idleness, in dissipation, varied by his activities as a writer—waiting till light should come as to who he was, and what he was here for. With a pathetic eagerness he used to beg me to make out his case, and to answer his question, that he might learn to live, and see his way out of the darkness. But as a fact, since he was emotionally a cheery man, despite all his perplexities and his occasionally keen sufferings, he really did

not want to find any way out at all. His real interest in coming to me was simply to get a listener. He once called his inner world, just as it was, his fairy land. He was plainly minded to stay there—and in the end so far as I was able to follow his career, he stayed. For some years I have lost sight of him. Of course, while he was near me, I did what I could; but the case was too temperamental for any effective treatment.

One example of my subject's style of written work must end this sketch. I choose almost at random, but not for the sake of illustrating what was least sane about my charge. On the contrary it is the slighter variation from the norm which is often most instructive. My records of the case give me such processes by the dozen. And this example is not by any means amongst the worst as to coherence. There is no reason to suppose the following passage to have been written under any direct toxic influence, and what I knew of my subject's habits rendered such an hypothesis, in this instance, quite unnecessary. This was his routine fashion of half-automatic brooding when alone. On this occasion he had been writing for an hour or two, in an essay spontaneously prepared for my eye, concerning a certain ideal that had come to him, after reading Newcomb's *Popular Astronomy*,—an ideal of an impersonal and heavenly sort of self-possessed wisdom, which, as he just then fancied, he desired to attain. What follows is a description of a warfare between this ideal sort of selfhood, and the passions of his usual sensuously chaotic life:—

"I mean to try to justify myself. Judge you. I'll listen some time when you have fully made up your mind about me. I think I am playing with parts of my character to get rid of them. Do you know I think I haven't any identity at all, down at bottom. I realize it when I am writing in this way. I feel almost mad. I am so out of my ordinary self of personal contact—and squeamish sensitiveness, when touched on occasion to the quick by the living forms about me in intercourse with them. Here's your deepest problem of psychology—the identification with the absolute. I mean the above seriously. I want you to con-

sider it. My sensations on these occasions are extremely peculiar and complex. I feel beyond what I have supposed to be myself, utterly, and yet there lingers the remembrance, and when I stop and head the remembrance, there comes a sharp conflict—an extremely sharp conflict—a mixed feeling in regard to self, as if I were two personalities, two selves—and another self were first turning to one then to the other (and yet it is not the *real* self—and yet again not unreal) and considering which is the right one. When feeling the impersonal self, feeling at the same time that it *must* somehow include in it the personal squeamish self—the one whose desires are gratified—who enjoys existence, the world—eating, drinking, loving, and feeling if it cannot have it, how it must be giving up all the joys of existence—everything that makes life worth living—how if it sacrifices itself it must feel infinitely worse than one feels it has an extremely sore tooth pulled from one's head—how it would be *mad*—insane—being another self than the natural one—yet feeling that the personal self *must* go—that the sore tooth must be extracted once and for all—and yet that it cannot—absolutely *cannot* part from it—for then it would be (yes I mean it—this is the sensation) *naught*—or mad—not myself—a mere machine—somehow—that it cannot realize it otherwise, and just so the feeling goes with the personal self in predominance—only then the impersonal self is so vague so far away—except when writing in this way and on several other like absorbed occasions—or in thinking of future self-conduct, etc.

“Well to renew—the fact of renewing brings me back of course nearer to the narrow personal self.—Oh how can I give up that self!—madness—without the joys of existence—nought—machine—not a self at all—for Sir Isaac Newton had a decided self—and so has Professor X.—they're all narrow more or less (and how can I sacrifice myself—this body and brain cannot even hold the enlarged comparative impersonality of Sir Isaac, without madness—being beside one's self—out of one's self—for he was so constructed as to be that comparatively impersonal self. He was—and I am not—I feel it. But time will tell providing the change is gradual

eh?—And meantime I get rid of much of the burden here—unless the associations occur again too strongly).

“My theme has grown. I’ll wait to catch the threads and then if possible condense.—Meantime I am hot. My head feels stuffy. I feel almost that impersonal self already (queer phraseology this—“impersonal self—This remark a part of personal self). I feel without usual bodily sensations—a fact—without usual sensations, thoughts—ways of thinking—yet stuffy and warm about head and body.—So I say to myself, I give myself up to you to make what use of it you can. The personal self—the narrowest—cries for recompense—says I am foolish—even in saying this ‘foolish’ foolish—says I may be ridiculed.—The more impersonal steps in and says, What then the difference? You (that is I) may be foolish but he (you, Professor Royce) makes use of it—and he understands—you wish to be understood—you have no object—not much object even in this—*but* let the writing go to him. What after all the difference?—And he makes use of it—and you express yourself which after all is a good thing—but again for whom?—yourself—myself. What object again?—justice? love? Who feels the love? Love for Professor Royce?—Why he laughs in a personal way—enjoys himself at Symphony Orchestra Concerts—not *altogether* for the absolute and the progress of the race. He perhaps laughs now—Who? Professor Royce—at me—then I’ll quit writing,—no again, What is the difference? But if no object once more answer me. Why do I write? After all it must be for self. No—yes—but again what is the difference? For self once more—for love—for the very fact that you are indifferent—no and yes again, etc. So the contest goes on and after all I keep on writing—yes I believe for myself. I believe I’m sure of that.”

My theses in the foregoing have been:—

1. Self-conscious functions are all of them, in their primary aspect, social functions, due to the habits of human intercourse. They involve the presentation of some contrast between Ego and non-Ego. This psychological contrast is primarily that between the subject’s own conscious act, idea, intent, or other experience, and an experience which is re-

garded by him as representing the state of another's mind. By means of habits gradually acquired, this contrast early comes to be extended to include that between one's inner states and the represented realities which make up the physical world.

2. In the primary cases of contrast between Ego and non-Ego, the former—the Ego—always includes (for reasons which have been explained in the foregoing), the present modifications of the common sensibility, and the feelings of the sense of control, where these are present at all. The latter, the psychological non-Ego, is a colder, a more localized, and less controllable mass of mental contents.

3. Emotional states, and in general all those modifications of the common sensibility which uniformly accompany any of our social reflexes, become, by association, linked with our memories and ideas of social situations, and cannot be repeated without more or less clearly or vaguely reminding us of such social situations in an individual or in a summary form.

4. When social situations involving particular contrasts of Ego and non-Ego are remembered or imagined, we become self-conscious in memory, or in idea. When emotions, associated by old habit with social situations, dimly or summarily suggest such situations, with their accompanying contrast of Ego and non-Ego, our self consciousness gets colored accordingly. Finally, when the varied contents of our isolated consciousness involve in any way, as they pass, contrasts which either remind us of the social contrast between Ego and non-Ego, or excite us to acts involving social habits, such as questioning, or internal speech, we become reflectively self-conscious, even when quite alone with our own states.

5. The anomalies of self-consciousness are (1) primary alterations of the common sensibility, or of the other contents of passing consciousness, such as dimly or clearly suggest anomalous social situations, contrasts and functions; or else they are (2) primary anomalies in one's social habits themselves. The two forms can be of course to any degree combined.

THE PERCEPTION OF TWO POINTS NOT THE SPACE-THRESHOLD.

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In the older psycho-physical conception of Weber and Fechner, the space-threshold of a locality on the skin is that distance of two stimulating points from each other at which they are at first perceived as two. The classical works of Weber, 'De Pulsu, Resorptione, Auditu, et Tactu,' and 'Tastsinn und Gemeingefühl,' first excited physiologists and psychologists to seek an exact knowledge of this distance for different localities on the skin and to form some physiological explanation of its regularities and variations. Fechner, using the terminology of Herbart, first named this distance the *Raumschwelle*, and the term has come to be used to a greater or less extent in psychological literature. The conception is mathematical in so far as it is based on the geometrical fact that two points are necessary to the simplest form of space-extension. It is physiological in so far as based upon Weber's theory of sensory circles, according to which two or more 'sensory circles' must lie unstimulated between two 'touched circles' in order that space, in its simplest form, be tactually perceived. The conception presupposes that there is a space-threshold; that it is the point of transition from the sensation of one point to that of two; and that it is to be found either by the so-called 'method of least perceptible changes' or by that 'of right and wrong cases,' provided the answers collected be passed through one or another of the formulas of Fechner, Müller and Camerer, all of which are based upon the Gaussian formula¹ of the theory of Probability.

These three formulas arose in connection with the method of right and wrong cases which Vierordt first formulated and

¹ This formula contains but two variables.

applied.¹ It was found from the first that between the sensation of one point and that of two, a variety of sensations which can neither be classed as those of one point nor of two appear. Of the pupils of Vierordt in the physiological institute at Tübingen, Kottenkamp and Ulrich² divided the sensations which appear in such experiments into the following classes—I. Double sensations, including *a*) those with a correct and *b*) those with an incorrect judgment of the affected spots of skin; II. simple sensations, *c*) pointed or *d*) as if the skin were touched with a long-shaped instrument, *a*) correctly so felt and *β*) incorrectly. Out of these cases they included only I *a*) under the category of 'right judgments,' leaving all the others to the class of 'wrong' ones. Paulus³ and Riecker⁴, as also Schimpf⁵ and Hartmann⁶ adopted the same classification, adding only the answer 'undecided' to the list of 'wrong cases.' In his first series of experiments,⁷ Dr. Camerer subsumed 'all sensations which cannot be nearer described than that they seem to be produced, not by one pin-point, but by something more extensive,' among the cases of 'right judgments.' But in his later series⁸ he accepted the four answers, 'two points,' 'more than one point,' 'undetermined,' and 'one simple point.'

To dispose of these troublesome groups of intermediate sensations, the three mathematical formulas of Fechner, Müller, and Camerer, each claiming superiority to the other two, were constructed. Their purpose is to reduce, by a simple calculation in the Theory of Probability, this numerous group of intermediate answers to the two variables, *r* and *f*, or *r* and *z*, which the formulas contain. In Camerer's first experiments in which the answers were 'one point,' 'two points,' and 'undecided,' that latter group were evenly di-

¹ Unterschieds empfindlichkeit im Schallgebeite—Vierordt's Archiv, 1856, Heft 2, p. 185.

² Versuche über den Raumsinn der Haut der oberen Extremitäten, p. 42.

³ Versuche über den Raumsinn der Haut der oberen Extremitäten, p. 3.

⁴ Versuche über den Raumsinn der Kopfhaut, Tabelle II, p. 14.

⁵ Raumsinn der unteren Extremität bei Anchylose des Kniegelenks I, p. 11 and ff.

⁶ Raumsinn der Haut des Rumpfes und des Halses. Tabelle I, p. 7.

⁷ Versuche über den Raumsinn der Haut nach der Methode der r. u. f. Fälle, I.

⁸ Versuche über den Raumsinn der Haut nach der Methode der r. u. f. Fälle, No. II, p. 285 ff.

vided between the two classes of 'right' and 'wrong judgments.' That all these methods leave much room for gross inaccuracies in results seems admitted by all. Nor do the elaborate formulas settle the question. The discussion of their relative values seems to have died with their champions, and the applicability of the methods of right and wrong cases to the determination of the so-called *Raumschwelle* is still an open question in the school of Psycho-physics, as the late discussions of Merkel amply demonstrate.

A more recent view has offered a somewhat different conception of space according to which it is based upon a quality of sensation as such. According to Külpe this quality, viz., extensity (*Ausgedehntheit*) belongs to sensations of sight and touch¹: according to James² and Ward,³ to all sensations. In connection with a series of experiments to determine the effect of exercise on the perception of two points, it was thought that a new side of the facts in regard to the tactual perception of space might be gained by asking the observer to describe his sensations, as fully as possible, giving their spatial characteristics and, in connection with the perception of two points, their apparent distances apart. A large number of the descriptions received are difficult to classify and cannot be conveniently given in the form of tables; but enough can be thrown into the following groups to convince one that every sensation of touch has a space-quality which at once becomes apparent through the comparison of two or more different sensations with each other.

The observers in these experiments were Herr Max Arrer (Ar.), M. Victor Henri (H.), Rev. S. Gringe Hefebower (Hef.), and Messrs. G. M. Stratton (St.), A. Müller (A. M.), and G. Tawney (T.). We wish here to express our thanks to these five gentlemen for their indispensable assistance. Table I. gives the cases in which one sensation only was felt. In the first vertical column are the observers; in the following four the applied stimuli, viz., one point, two points whose distance apart is below the threshold for the

¹ Grundriss der Psychologie, p. 347, § 3.

² Principles of Psychology, Vol. II, Chap. XX, p. 135.

³ Encyclopædia Britannica, Article 'Psychology,' pp. 49, 53.

perception of two points, two points near the threshold, two points over the threshold; in the following four columns are given the answers received, thrown into the following groups: 'small,' 'sharp' or 'pointed;' 'medium,' 'round' or 'good;' 'large,' 'blunt' or 'extended,' and 'a line' or 'lengthy sensation.' The adjective 'good' was used by nearly all, and when asked what they meant, they answered 'medium-sized,' 'round,' 'solid,' 'not to be mistaken,' 'easy to recognize,' etc. The instrument used in all the experiments was a simple pair of compasses, into which fine, carefully-prepared bone points had been inserted.

TABLE I.—Descriptions of 667 single sensations in terms of space, the stimuli being 1 point, 2 points below the threshold, 2 about the threshold, and 2 over the threshold.

OBSERVER.	STIMULUS.				ANSWER.			
	One point.	Two points under the threshold.	Two points about threshold.	Two points over threshold.	'Small,' 'sharp' 'pointed.'	'Medium,' 'good' 'spherical.'	'Large,' 'blunt' 'extended.'	'A line' or 'lengthy sensation.'
Ar.	12	84	58	13	2 11	7 30 20 1	1 3 11 3	2 40 27 9
H.	45	27	3		23 6	5 6 1	12 11 2	5 4
St.	26	22	3		7 3	6 3	2 6	11 10 3
A. M.	3	39	30		3 10	2 11	27 19	
Hef.	30	84	77	21	20 7 4	10 17 6 1	8 10 9 2	2 50 58 18
T.	56	22	4	8	15 12	15 2 2 4	17 4 1 3	9 4 1 1

In this table the sensations shift gradually from the first column, 'small and pointed,' toward the last two, as the stimulus passes from one point to two points over the threshold. In the cases of H., A. M., and St., the absence from the table of experiments with two points over the threshold is due to the fact that these observers seldom or never mistook two points over the threshold for one point as the others so often did. The table shows that the space-quality of the sensations of different persons varies widely. Only a very general regularity exists between them. A. M. seemed not to experience single long sensations at all, while St. and Hef. seemed to have more lengthy ones than any other kind. I touched the arm of A. M. with the edge of a visiting-card and asked whether he ever had similar sensations from the compass-points. His answer was an unqualified no.¹

Table II. gives experiments in which two sensations were felt and described. In the first two vertical columns are the observers and the stimuli for each; in the following seven are the judgments, divided into two classes, where the sensations were alike, and where they were unlike or different. In the first class the two points are alike and either 'small' and 'sharp,' 'medium-sized' and 'spherical,' 'large' and 'blunt,' or 'two points with a line connecting them;' in the second class the points are different: 'the one large and the other small,' 'the one lengthy and the other round,' 'different in space-quality, but connected by a line or long sensation.'

¹ It may be significant that the muscles of H. and A. M., those of A. M. especially, were hard and round at the investigated places, filling out the skin so as to prevent its movement; while those of St. are comparatively soft, and those of Hef. rather fleshy, permitting the compass-points of their own weight to sink into them and thus causing comparatively extensive movements of the skin. This may explain the fact of their frequency with St. and Hef. and their infrequency with H. and A. M. In any case the cause of these variations seems to be chiefly peripheral, as distinct from imagination, expectation, etc.

TABLE II.—Descriptions of 1063 double sensations, 765 alike and 298 unlike, the stimuli being 1 point, 2 points below the threshold, 2 points near the threshold, and 2 points above it.

OBSERVER.	STIMULUS.	TWO POINTS FELT ALIKE.				TWO POINTS FELT UNLIKE.		
		'Small, pointed.'	'Medium, cal., good.'	'Large, blunt, diffuse.'	'A line, or lengthly sensation between.'	'One large, the other small.'	'One lengthy, the other round.'	'Two unlike points connected.'
Ar.	One point.					1		
	2 p'ts under threshold.	10	5	2	1	20	10	5
	2 p'ts about thres.	15	12	5	6	26	16	3
	2 p'ts over thres.	25	20	15	1	2		
St.	One point.	28	25	6	23	8	5	2
	2 p'ts under thres.	31	20	13	30	11	4	4
	2 p'ts about thres.	5	5	6	5	1	1	1
	2 p'ts over thres.	7	9	13	3	2	1	
A. M.	One point.	5	1			2		
	2 p'ts under thres.	3				7		
	2 p'ts about thres.	6	7	4	1	3	4	
	2 p'ts over thres.	5	22	1		7		
H.	One point.	22	22	10	8	1		
	2 p'ts under thres.	7	5	1	2	20	5	10
	2 p'ts about thres.	4	3	1	5	25	3	16
	2 p'ts over thres.	23	19	7	2	2		
Ta.	One point.	50	21	1	27	38	4	6
	2 p'ts under thres.	7	2		6	1		
	2 p'ts about thres.	4	1		2	2		
	2 p'ts over thres.	61	32	4	15	15		5

Table II. gives ample illustration of the fact which we have in hand, viz., that all sensations of touch have a space-quality. It will be noticed that the larger proportion of the cases where the two points are different are stimulated by one point or by two points under the threshold. For example, Ar. felt two points alike 10 times and unlike 20 times when the stimulating points were below the threshold, 15 times alike and 26 times unlike when the points were near the threshold, but 25 times alike and only 2 times unlike when the points were over the threshold. This fact accords

with the self-observation of Ar. that there is always a difference between the two sensations of a so-called *Vexirfehler*, where two points are felt where only one is touched, such that he can in most cases recognize the illusory and the genuine points. But this was not the observation of St. or A. M., but rather the opposite. In the case of Hef. the two sensations from two points over the threshold were always felt as separate, round, solid, and perfectly alike. But what the cause of these differences in different observers may be we are not able to surmise owing to the lack of a large number of observers. The false perception of two points where only one point was touched was most frequent with St. and T.; and least frequent with Hef. who seems to possess in general a very highly developed and very healthy sensory nervous system.

Variations in the 'threshold' were frequent with the same individuals, not only from day to day, but also within the same hour. One observer was found in Wundt's institute who has taken part in numerous skin-experiments, on the volar side of whose lower arm a 'threshold' could not be found which remained constant for a half hour; a similar experience was that with St. and T. Moreover, we made the attempt to repeat the same experiment several times in succession under exactly the same conditions. An example of the results obtained is the following. The place is the volar side of St.'s right lower arm, as it lay unmoved throughout the experiments on the table. The distance apart of the points was 20 mm. The spots on the skin were the same in each experiment, the time interval being always about two minutes. The pressure in each trial was the same, viz., the weight of the compasses. His answers were as follows:

First experiment—two points, 15 mm. apart, clear, equally strong, simultaneously and immediately perceived.

Second experiment—at first a line; then two distinct ends which became perfect points about 30 mm. apart but connected by a line.

Third experiment—one point, sharp, deep, somewhat painful.

Fourth experiment—two points separated about 20 mm., but lying at right angles to the above two points.

Fifth experiment—one point, somewhat large.

Sixth experiment—at first several points: then three became clearer than the remainder: at last one seemed a real point surrounded by a group of fainter ones.

Seventh experiment—at first two points bound together by a line: then a large lengthy sensation about 15 mm. in length.

Eighth experiment—two points about 12 mm. apart, clear, equally strong and simultaneous.

Ninth experiment—one point, small, simple, and definite.

Tenth experiment—two points, 10 mm. apart, simultaneous, equally strong, becoming painful.

Experiments similar to these were made on H. and, later, by H. on T. with the same general results. Such variations are well known to every observer of skin-sensations. The genius of Fechner did not succeed in reducing their manifoldness to simple regularity. Such experiments seem to show clearly that the perception of two points takes place under conditions too varying and too different to be regarded as the first tactual space-perception. Our tactual sense of space seems to be far more exact and far more regular than the perception of two points.

From these and similar experiments it seems that there is no such thing as a 'space-threshold' in the entire field of skin-sensations, because there is no sensation of touch, not even that of a fine needle-point, which does not already possess a spatial quality. The latter does not enter into sensations of touch at the perception of two points. The mathematical point, a point without extension, does not exist either to sight or touch. Geometrical extension in one direction begins with two points, but tactual extensity-perception clearly begins with the comparison of simple tactual sensations. The difference between a point and a line like the edge of a visiting-card is sooner perceived on the lower arm at least, than the difference between two points, thus showing that the perception of extensity through touch does not depend upon the experience of more than one simple sensation. We are fully convinced that the sensation of one point, however fine, has in it the data for abstracting three dimensions by comparison with other points, *i. e.*, by the usual

process of assimilation and discrimination which underlie all perception. The space-threshold should be a certain moment in sensations where extensity, *i. e.*, spatiality, first enters consciousness; but the *Raumschwelle* of Weber and Fechner is the moment where two simultaneous touches enter consciousness which we have seen comes much later and under much more varying conditions—it is in short not a *Raumschwelle* at all. If we wish to speak of a space-threshold at all, we should designate by the term a fact of assimilation rather than any measurements on the surface of the skin. 'The fineness of the locality sense' (*Feinheit des Ortsinnes*) is, properly speaking, the object of all such measurements, but never the 'space-threshold.' We have shown that single sensations and double sensations are both indefinitely various, but the variations are not without some regularity corresponding to the outer stimulus. The single point, the line, the surface, and even the solid, are all perceptions of touch which have their origin in the subjective and objective conditions of the sensations. In short, we have here a large field of sensations which has never been exhaustively investigated. Sensations belonging to this field have, until very lately, been regarded as mere hindrances to the ascertainment of the *Raumschwelle*, and have been either ignored, as in the first experiments of Camerer and those of Vierordt's pupils, or dealt with as food for psychic threshing-machines, such as the formulas of Fechner, Camerer and Müller.

Finally, the conception of a *Raumschwelle* is nothing more than a remnant of the old way, 'von oben nach unten,' of 'Scholastic deduction,' which Fechner strove so faithfully to eradicate from psychology. It is the carrying downward, 'von oben nach unten,' of a physiological and mathematical conception—a reading into sensations of the forms of a highly abstract intellect; whereas the mathematical conception is in fact an abstract of the spatial quality of sensations themselves. It may be that when psychologists have studied sensations humbly and exhaustively they will find among them, and in all of them, the germs of every flower that blows—of both the form and substance of thought, feeling, and will.

DISCUSSION AND REPORTS.

PHYSICAL PAIN.

Professor Strong's article in the July number of this REVIEW entitled 'The Psychology of Pain' must be welcome by all who agree that the determination of a correct psychological theory of pleasure and pain is of importance at this time. As Prof. Strong has noticed my work in this direction perhaps I may be allowed space to note a few points in which I think his argument lacks cogency.

In the first place I am compelled to dissent from his use of the term 'aspect theory' if it is to cover the hypothesis that I defend. I use the expression 'quale theory' to describe the hypothesis I adopt, for the very reason that I wish to place it in opposition to the theory that holds 'that in every actual state of mind we are able to distinguish these two sides, the cognitive and the affective;' this affective side being 'called its feeling tone.' I object to drawing a distinction between a cognitive and an affective side of an experience: I do not believe there could be a feeling of pain without 'any connection with or reference to cognitive states whatever:' to quote Prof. Strong's words.

In my view 'awareness' of pleasure and of pain is brought about by the same general process that brings to us our appreciation of sensations of special qualities, our appreciation of the intensity of those sensations, our appreciation of the reality or unreality of the percepts which are elaborated as a result of these sensations. In other words, I hold that pleasure and pain are cognized, just as much as intensity is cognized, or just as much as reality is cognized.

Furthermore, I hold that if we assume a special 'affective' activity in all experience, which gives us our appreciation of pleasure and pain; then we are bound also to assume a special mind action to account for the recognition of intensity, for the recognition of reality, and in fact for our appreciation of an indefinite number of qualities of experience. I may be allowed, perhaps, to refer the reader to an article published in 'Mind' for April in which I have spoken of this point at some length. It seems to me that a large proportion of the objections which Prof. Strong raises against the concep-

tion of physical pain under the 'aspect theory' fail to present difficulty under the 'quale theory' which I defend, as I shall now attempt to show.

But first of all I must say a word in general in protest against the method that builds up a theory concerning some special mental state, which has been deliberately separated off for theoretical study from some other mental state which is by general acknowledgment closely connected with it; and the setting forth of such a theory without attempt to relate it to the experience connected with the closely-connected state which for mere convenience of study we have temporarily agreed to overlook.

Prof. Strong labors to gain a true conception of the nature of physical pains without allowing the light given by the experience of pleasure to shine upon his path. If it were necessary to emphasize the danger of such study of pain as though it had no relation to pleasure we might refer to the position in which the pain-taking Goldscheider has found himself; he having proclaimed the discovery of distinct pain terminals in the skin as the result of just such a specialized study; but having been lately compelled to withdraw his assertions. Had he studied with thoroughness the nature of pleasure he would certainly have been induced to modify at the start his first statements concerning pain, and would have saved other psychologists at least a deal of discussion and annoyance.

In the second place, I must confess that I feel it to be a bold assumption to separate physical pain from displeasure; for it seems clear to me that all displeasures and pains are closely bound together by the fact that they lead to like resultants in our life of thought and expression; furthermore, even in the region of sensation where the distinction between pain and mere displeasure is most marked, it is certain that what is clearly no more than displeasure may often, in connection with increase of intensity, develop into pain, without the occurrence of any observable break in the experience.

But let us for a moment consider, as does Prof. Strong, only those so-called physical pains which, from the theoretical position that I hold, are in fact no more than certain specially vivid portions of the pain part of the general pleasure-pain field.

Concerning the lesson to be learned from neurology, I agree with Prof. Strong that the facts of nerve physiology as we know them do not establish the 'quale theory' which is under discussion, and that they are certainly far from overthrowing it. I cannot help thinking, however, that Prof. Strong has to some degree exaggerated the

difficulties in this direction, and has therefore underestimated the strength of the favorable evidence.

I have suggested that the so-called 'pain sense' in the skin which is produced by cutting or pricking or by some other violent disturbance in the tissues may not improbably be merely a special sensation *which, under the conditions of experiment, is always experienced in painful phase*: that this special sensation in its non-painful phases we may suppose we are unable to separate in analysis, it thus remaining an inseparable part of some of the complex sensations brought out by pressure or by some other dermal irritations of moderate degree. This seems to bring into line with the *quale* theory the fact of which opponents make so much; viz., that cutting and pricking is always painful to the average man in his normal state; nor does the hypothesis seem to me to be a strained one.

That the pain-giving capacities of the tactile or temperature senses are discerned with difficulty is true, but I do not think with Prof. Strong that we are forced by the evidence to admit that the 'affective coloring' of the tactile and temperature sensations 'never amounts to positive pain.' What we are compelled to admit by the evidence to which he refers is that the patient who is anæsthetic (and hence of course analgesic) as to the 'cutting, pricking sensation,' is often rendered analgesic in other directions, without being rendered anæsthetic, in these directions; and, as Wundt has shown, it is very easy to conceive that this latter condition may occur through a reduction of our capacity to be stimulated to the degree necessary to the production of the proper sensations in painful phase.

It is not at all necessary, therefore, to admit that when under normal conditions we perceive a painful burn, the pain and the heat are called forth by separate nerve fibres.

It does not seem to me to be at all clear that sight, hearing, taste and smell are in their nature analgesic, although Foster, Goldscheider and others do so declare.

The sensations from the non-retinal parts of the eye are so intimately connected in consciousness with those arising by stimulation of the rods and cones that determination of this point in connection with sight seems to me to be well nigh impossible.

A similar difficulty arises in connection with stimulation of specific elements of the organ of Corti in the ear.

No one would claim that tastes and smells cannot be intensely disagreeable, I myself should say that they can be distinctly painful, although it is to be agreed that in these cases the limits of the action are so narrow, if we may so speak, that it is difficult to compare

these pains with the pains produced by cutting where the number of nerve terminals that are at one time stimulated to great excess is in all probability very much greater. Moreover, there is every reason to believe that in both nose and mouth excessive stimulation calls out functioning in other organs than those of smell and taste, functioning which we find entirely beyond our control, and which tends to prevent that excessive reaction to the hypernormal stimulus, which is necessary to the production of marked painfulness.

It must not be forgotten, moreover, that very many of our sensations come into clear consciousness only as the result of the summation of many activities which individually are of too small effectiveness to be appreciable in our conscious life at all: this is evident for instance with our normal experience of atmospheric cold and heat, and with the sensations connected with the rubbing of surfaces. It must be remembered also that in many cases we are unable to separate the sensational elements in a pulse of consciousness from their products or resultants of a more complex nature; and this is notably the case with reference to the mental states induced by the stimulation of eye or ear.

It should not surprise us, therefore, that we find it difficult to discriminate pleasure or pain in connection with many sensations which are themselves difficult to isolate.

Turning now to introspective analysis I would say that the difficulties first suggested by Prof. Strong disappear if one hold, as I do in opposition to most of the 'aspect theorists,' that in most cases, indeed, all sensations are accompanied by at least a minimum of pleasure or of pain, but that there are cases where it must be supposed that neither pleasure nor pain exists, but that then at the same time there exists no 'feeling tone' whatever. The notion that in such cases there must be a zero 'feeling tone' is determined by the view that in every actual state of mind we are able to distinguish an affective side over against the cognitive side; and to this view I dissent, as I have said above.

That in cases of extreme pain we usually fail to distinguish the forms of sensibility to which the pain is attached, is a phenomenon of attention that, to my mind, presents no especial difficulty if we conceive of the pain as I do as a particular quality of the presentation of which the sensational differentiation is another quality. It is of great importance to our welfare that our attention should be engrossed by the fact that we are experiencing an extreme pain, and there is no reason whatever, so far as I can see, to be surprised that

it often does so, to the loss of appreciation of the sensational quality that goes with the pain.

Comparison of this experience of attention to pain, with our experience of attention to other qualities of presentation seems to me to confirm this view. The psycho-physicist in experiments made to determine the laws of intensity is surely able to turn his attention solely to the graduation of the intensity, and in so doing he certainly loses appreciation of the specific mental element which is more or less intense. In a more developed form of consciousness we note at times a persistence of attention upon such a quality as the reality of a perceptual presentation; the questioning as to the reality or the non-reality in such cases becoming all absorbing, so that we altogether lose our appreciation of the elements which form the basis of the quality of realness that we are considering.

From Prof. Strong's conclusion "that pain is distinctly the content of certain cutaneous sensations, as blue of certain visual ones," I of course dissent, not only on theoretical grounds but also as the result of introspective evidence as I view it.

But suppose this were all true, I still cannot help thinking it would be an error to class pain (or pleasure) together with states like heat, cold, touch, taste, smell, hearing, sight, which are commonly known as 'sensations,' if for no other reason than this, that heat, cold, touch, taste, smell, hearing, sight, are all determined by the special action of differential terminal organs, *answering to special forms of stimuli in the environment*: hearing, for instance, answers only to vibrations in the air, sight answers only to vibrations in the hypothetical ether.

Whatever may be thought as to the probability of the discovery in the future of terminal organs for physical pain, I think it must be granted that there is no evidence whatever that there exists any special form of environmental stimulus to which physical pain can be the special correspondent; and if there were no reason other than this, it seems to me that it would be a great mistake to place in the well recognized class 'sensation,' a mental state like pain which lacks one of the most marked characteristics of sensation in general.

Physical pains and sensations may properly be designated as forms of sensibility but surely they must be held to be forms of sensibility of different types.

NEW YORK.

HENRY RUTGERS MARSHALL.

A CASE OF SUBJECTIVE PAIN.

I operated upon Mrs. P. for glaucoma, a disease which is characterized by hardness of the eyeball, great pain, and diminution of the power of seeing. Although cocaine was used, the patient experienced considerable discomfort from the speculum and decided pain from the incision in the cornea and the cutting of the iris.

In fact, when the knife was thrust into the anterior chamber, she almost rose to a sitting posture and attempted to grasp my hands. When the iris was cut she rolled the eyeball very far upward and rendered the procedure both difficult to perform and dangerous to the integrity of the crystalline lens. The operation, however, was finished without injury to this structure, and the eye made a successful and fortunate recovery. The evening following the afternoon on which the operation was performed, the patient suffered considerable pain, for which there was no apparent cause. During one of the most painful paroxysms she thought, by chance, of a young girl who was friendly and agreeable to her and of whom she was fond. She said the painful sensations passed away 'like a wave' as soon as the image of the girl was called up. As soon as the agreeable image passed away the pain returned. Being of an investigating mind, the patient proceeded to call up in succession the images of persons agreeable and of those disagreeable. The agreeable images invariably caused relief and the disagreeable ones produced a 'wave of pain.'

She said that the pain produced by the disagreeable images was greater than that which followed upon the disappearance of the pleasant images. The relief caused by the image of her agreeable little friend was so much greater than that produced by any other agreeable image, that she schooled herself to keep this image constantly before her until she fell asleep through the influence of an anodyne; on the following day the phenomena had disappeared. It is worthy of remark that the other eye of this patient had been operated upon one year before, and although the pain after the operation was greater and the recovery more prolonged, she had no experience as that related. It is also well to state that the performance of the first operation was attended by less pain than the second.

The patient is a highly intelligent person of sixty odd years, sensible and practical, albeit a little given to the use of extravagant and poetic expressions.

The case is unique in my experience, and that it is curious and interesting I think may be predicated with certainty.

NEW YORK POLYCLINIC.

J. HERBERT CLAIBORNE.

PSYCHOLOGICAL LITERATURE.

The Foundations of Belief. A. J. BALFOUR. New York, Longmans, Green, & Co., 1895. Pp. 366.

This book considers beliefs, or certain important classes of them, from three points of view: from the point of view of their practical necessity; from that of their philosophic proof; and from that of their scientific origin. Part I, consisting of four chapters, deals with the first topic under the title, 'Some Consequences of Belief;' part II, also of four chapters, considers the second topic under the title, 'Some Reasons for Belief;' part III, consisting of two chapters, treats of the third under the heading, 'Some Causes of Belief.' The work closes with a fourth part entitled 'Some Suggestions towards a Provisional Philosophy.'

One cannot read the suggestive and often acute discussions of the book without the feeling that the cause of English conservative politics has robbed British philosophy, in the person of Mr. Balfour, of a man whose name might have had an honorable place in the list of British thinkers. As it is, the production of such a work by one of the active political leaders of the Conservative Party, is a most interesting phenomenon. The book more than sustains the expectations raised by the author's earlier work, 'A Defence of Philosophic Doubt.'

The book is stronger in its critical than in its constructive portions, and often reminds one of the brilliant criticisms of the late Prof. Caro of Paris. In saying that the work is especially strong on the critical side, we do not wish to imply that the criticisms are at all captious. The tone of the author is uniformly fair, and his treatment of views with which he differs, even generous. The discussions are more philosophical than psychological, and viewed from the philosophical standpoint the work may be characterized as a critical examination of, and an attack on, the rather shallow empiricism (to which the author gives the name 'Naturalism'), which has reigned for so long a time in Great Britain. It is an attack too which Naturalism can hardly afford to ignore.

The book contains considerable matter of interest to psychologists. Mr. Balfour's remarks on determinism, on 'experience,' on the relation of belief to language, on the relation of belief to reality and on the so-called 'immediate judgments of the senses,' and on numerous other topics are worthy of the psychologist's notice. His discussion of the non-rational causes of belief as distinguished from the rational grounds for belief, and of the influence of psychological 'climates' on belief (pp. 214 f.), are especially good. These are distinctions which seem natural, and even obvious, and yet they are very often overlooked. Inner assent, or belief, as the author points out, is produced in countless cases by custom, education, public opinion, the contagious convictions of countrymen, family, party, or church. "But a small number, at least of the most important and fundamental beliefs, are held by persons who could give reasons for them, and of this small number only an inconsiderable fraction are held *in consequence of the reasons* by which they are nominally supported." "Mere early training, paternal authority, or public opinion, are causes of belief before they are reasons; they continue to act as non-rational causes after they become reasons." Looked at from the outside, as one among the complex conditions which produce belief, reason appears relatively insignificant and ineffectual; looked at from the inside, it claims by an inalienable title to be supreme. These are distinctions, we repeat, which have not, perhaps, received the consideration which they deserve in the treatment of the psychology of belief. Mr. Balfour in his discussion of psychological 'climates' and their relation to the rational grounds for belief, does not give as much weight as we think he should give to the *inner* state of mind to which Prof. Huxley alludes in his remark that "belief is the product of two factors, the first is the *state of the mind* to which the evidence in favor of that belief is presented; and the second is the logical cogency of the evidence itself;" but the discussion is, nevertheless, one which will repay reading by those interested in the psychological and epistemological aspects of belief.

YALE UNIVERSITY.

GEO. M. DUNCAN.

Dolore e Piacere, Storia naturale dei sentimenti. GIUSEPPI SERGI.
Milano, Dumolard, 1894. 12°, pp. 395.

Professor Sergi's book has for its frontispiece Edinger's schematic diagram of the nuclei of the medulla oblongata and pons, and its author's cardinal idea is that this region constitutes a great centre for pleasure, pain, and emotional excitement generally. There are other secondary theses, and the whole is preceded by certain psychogenetic theories to which I will refer first.

The primordial property of all living matter may be called irritability or reability. In its simplest state this is merely *trophic*, but as tissues differentiate and combine into systems, the irritability of the muscular system becomes *contractility*, and that of the nervous system *sensibility*. Sensibility is at first *unconscious*; but at a certain stage of complication *conscious* sensibility arises. This latter is nothing essentially new, but only a 'transformation' of the one primordial irritability, of which, however, a large proportion remains 'untransformed' even to the end—even in the highest animals and man. Prof. Sergi proves the essential identity of all the grades of irritability by experiments with anæsthetics. These narcotize and paralyze the motor reactions of the simplest animalcules as well as the highest consciousness of man. The reader will note the monistic point of view ('transformation'), and the divergence from the assumption, so popular just now, of psycho-physiological 'parallelism.'

Unconscious sensibility becomes then conscious sensation, and sensation and movement, being both transformations of irritability, are inversely related—the more movement the less immediate sensation, as we may observe in infants and women (61-2). When the outer stimuli are normal in amount the sensations are 'specific,' objective, and cerebrally localized. They are *painful* when the stimuli are excessive. [What appear to be 'pains of inaction,' or want, are really pains either of excessive *tension* in the unused muscles or of abnormal *irritation* by altered blood, as in thirst, etc.] Excessive stimuli, at the same time that they produce pain, alter the heart-action and the breathing, even in animals without hemispheres. Seeing, then, that pain and disturbance of these vital functions vary concomitantly, Prof. Sergi concludes that they are both functions of the same region, that of the *calamus scriptorius*. "The cerebrum has no other action in pain (or pleasure) than that of *rendering the phenomenon conscious* [this is not explained]: only by this does the latter gain an intellectual character, and also because some pains are percepts, being localized" (73). That the brain is not the immediate organ of pain, is also proved by the painlessness of wounds there, an insensibility in striking contrast with the extreme distress caused by sensible excitement of the heart and respiration. Pleasure comes from liberation from pain or want and quickly passes into indifference, as in the deviation of the needle when the electric current stops. Positive pleasures of stimulation (as at a banquet) also exist, and carry diffused organic effects, and are also referred by our author to the bulbar region.

Emotions result from outer stimuli exciting first the cortex, then consecutively the bulbar region, and consequently the circulatory and respiratory organs. Psychic emotion and bodily pain and pleasure thus have the same vital centre for their organ, which is played on from below by physical stimuli and from above by psychical activities. In other words, emotion is *cortically initiated* pleasure or pain. James and Lange are wrong in not finally referring it to the bulbar centre, which is the primordial emotional centre; but the special character of the various emotions is determined by subaltern centres, little psychic organisms, determined by the association of race-experiences, which always coöperate with the primary centre and impress on fear, anger, etc., their special and distinctive characters. The chief of these 'instinctive' centres are that for individual preservation, and the sexual, the parental and the social centres. [Prof. Sergi doesn't make it clear whether these secondary centres are cortical or infra-cortical. Neither does he say distinctly which physiological phase of the process he believes the emotional *consciousness* to be attached to, whether directly to the bulbar discharges or (as in the Lange-James theory) to the motor effects of the same. Pretty surely the latter, as he speaks elsewhere (p. 105) of the hemispheres as 'means of consciousness' of the more vital phenomena. Cf. also pp. 129, 131, 140, etc.] The difference between depressive and expansive emotions is explained by *inertia* or *reaction* on the part of the centres. One and the same objective stimulus, according to its own strength or the temporary state of the nervous system, may simply shock the latter into a state of paralysis (producing, *e. g.*, *fear*) or rouse it into resistance (producing, *e. g.*, *anger*). Much is made of these two opposite kinds of effect.

The genesis of emotions is teleological. Like pleasure and pain they are (within limits) signs of benefit or harm, and lead to actions of preservation or defense. This is explained at length in one chapter, and a new classification of emotions, based on their characters of transiency and permanence, inertia and reaction, is set forth in another. Other chapters contain descriptions of special emotions, their variations and exciting conditions, normal and pathological; and finally we have seven chapters on the *Sentiments*, æsthetic and religious. The latter has been a sometimes useful pathological variation in human history. The æsthetic sentiments do not coexist with useful activities, but, as Spencer says, with activities that are symbolic, superfluous or playful. This, however, is compatible with an originally serious use for functions that now are purely æsthetic. Love-songs and war-dances are an example. The *pleasure*

in all cases is mediated by the effect on the bulbar centre, as the author shows in detail for the case of music, the hearing of which alters pulse and breathing. There are in these chapters a number of fine observations of detail and descriptions of æsthetically impressive situations that show well the beauty of the Italian language. But, on the whole, the author's treatment is superficial, and the complexity of the æsthetic life hardly comes out in his pages. The same criticism may be made of his entire book. It would have been 'epoch-making' thirty years or more ago; but after so much speculation of the same sort has been printed, the reader has a right to statements that are less general and vague. In fact the only thing I can think of as a new fact deduced by Prof. Sergi is contained in his observation that, since bodily and spiritual sensibility both have the medulla for their seat, it is impossible that the same person should be highly sensitive in one way and insensible in the other.

W. J.

Logik der Geisteswissenschaften. Zweite Abtheilung des zweiten Bandes der *Logik*. Zweite umgearbeitete Auflage. W. WUNDT. Stuttgart, Enke, 1895. Pp. 643. M. 15.

In the first edition (1883) the methods of the philosophical sciences were included as a part of the second volume. The enlargement, which has resulted in a separate volume on this subject in the present edition, is due in part to additions in the discussion of Jurisprudence, and to a new extended section on sociology. Much more important, however, are the elaborations in the treatment of the fundamental principles relating to all these sciences, and of psychology, regarded as 'the most general philosophical science, and at the same time the indispensable groundwork of all the rest.'

A full description is given of the two methods peculiar to these sciences, namely, interpretation or the explanation of a phenomenon through a psychical motive, and criticism or the determination of 'values;' together with an account of the special modifications of the more general methods which belong to the natural sciences as well. The principles, namely, analogy with our own experience, influence of social and influence of physical environment, which we make use of in the study of all physical, historical and social phenomena, are discussed at length. It is maintained that empirical laws, in the same sense in which this term is used in the natural sciences, are to be found in the philosophical sciences; but exceptions to these laws occur not only through the operation of other general laws, but also through individual acts, which are, indeed, in accordance with psychical laws, but not general in their appearance. The

only causal laws in the philosophical sciences are the psychical laws of individual experience. It is this fact which makes Individual Psychology the foundation science on which all the rest must ultimately base their explanations. The treatment of the Logic of Psychology forms, therefore, an important part of the general system; and is, further, of peculiar interest as a thoroughly revised and in many points new exposition of the author's views in this field where his influence is of such prime importance.

The general position is the inevitable logical consequence of the well-known doctrine of parallelism. Since the psychical world is in no way causally connected with the physical, but an independent unity in itself, it is evident that a science dealing with psychical phenomena can make no immediate use of physical facts, but must formulate its laws and even its methods on an exclusively psychical basis. This position is emphasized by a vigorous attack upon what the author calls psycho-physical materialism, or the definition of psychology which makes it the mission of this science to investigate the physical and physiological conditions of psychical phenomena. Still more is the standpoint made clear by a complete revision of the description and even the nomenclature of the experimental methods. An example will serve to illustrate. Instead of the common names '*Fehlermethoden*' and '*rechte und falsche Fälle*,' we have '*Abzählungsmethoden*' and '*positive und negative Fälle*.' The reason for this change is that the old names imply that the psychical process is being directly measured by the physical stimulus, and is 'right' or 'wrong' in so far as it agrees with the stimulus or not. This implication is, however, based upon the false notion that a causal relation exists between the physical and psychical worlds. In reality no such relation can be assumed; and psychical processes can be compared only among themselves, measurement being possible in the sense of such exclusively psychical comparisons alone. The whole value and significance of the stimulus is that we employ it as a means to produce the parallel psychical process at a time and under circumstances favorable for comparison with other psychical processes and for more exact observation. The importance of the physical agent as such a means is not to be lost sight of, for it is the only way in which self-observation, in any true scientific sense, can be made possible. But, on the other hand, it is not to be forgotten, as is so often the case, that the means is not the end. In other words, the study of the physical and physiological means is merely auxiliary and preparative, not the final science. Psycho-physics and physiological psychology are to be regarded as transitional stages, not as the real science of psychology.

The author's position may be further briefly characterized as 'Voluntarism.' By means of logical abstraction we divide our complex psychical experiences into elements, among which the one kind that we call volition may be said to be typical. Not that we are to neglect the other elements or attempt to reduce them to cases of volition, but we are to think of all psychical experiences as unitary processes, like volition. It is to be noted that the word processes must be emphasized as much as unitary if we will truly describe the transitory character of psychical experience.

Finally, the name 'Actualism' will serve to define the author's view of the nature of the soul as opposed to 'Substantialism.'

LEIPZIG.

CHAS. H. JUDD.

Thinking, Feeling, Doing. E. W. SCRIPTURE. Meadville, Flood & Vincent, 1895. Pp. XII + 304.

This book leaves still unanswered the question whether experimental psychology can at the present time be popularized in a useful and dignified manner. It demonstrates beyond the shadow of a doubt, however, its author's entire unfitness for such a task. Few things have been neglected to make the book bad, and many a reader who, like the present writer, had looked to Dr. Scripture for something substantial and withal creditable to American scholarship, will turn away honestly and thoroughly disappointed. The few redeeming features of the book are found in the generally good typographical work, the ingenuity of some of the methods described, the accuracy of the facts cited, and the clear, if not elegant, style. For the last two characteristics Dr. Scripture is not wholly responsible, as will appear below.

The title of the book indicates something of the nature of the contents, but very little of the method or order of presentation. The opening chapter, on observation and experiment, is followed by six chapters on reaction-times and the peculiarities of will and attention as revealed by experimentation. Then follow seven chapters upon sense perceptions, one each upon feeling, emotion, memory, rhythmic action and suggestion in the order named, concluding with two chapters upon the general subject of psychological standpoint and method, of which the one is entitled materialism and spiritualism, the other the new psychology.

Dr. Scripture may be possessed of a deep and well-conceived method in the arrangement of his material; but, if so, the fact does not intrude itself upon the reader's attention. The chapters read almost equally well in either direction, and one's logical instincts are somewhat baffled by the fact. A fatal weakness of the book lies

just here. There is no vital principle within it. *Dissecta membra* are all that the eager public, for whom we are given to understand the book is expressly written, is privileged to see. These are presented, however, with all the graphic prodigality of a popular monthly. Two hundred and ten cuts to two hundred and ninety-five pages of text is all that the most extravagant pictorial appetite could ask. The author will probably insist, with his usual—and admirable—reverence for *fact*, that his book possesses all the vital unity consistent with the present stock of experimentally verified data. If this be really the case, the work might better have been postponed for a few years. But, in the opinion of the reviewer, Dr. Scripture's lack of system is quite as largely due to his lack of a deep and sound conception of what really constitutes a fact and wherein lies its value. He has become psychologically myopic. This opinion is confirmed by a certain cocksureness of tone characterizing the book, which must arouse the suspicions of even the most unsophisticated reader. Among the more knowing these suspicions will be at once awakened upon reading in the preface that "this is the first book on the new, or experimental, psychology written in the English language." Dr. Scripture may possess sufficient exegetical agility to harmonize these words with the facts; but, with Sanford's manual already in the field, his statement is at least misleading.

In a work largely devoted to expounding the value of accuracy, it is most unfortunate to find such gross carelessness in the use of quotation marks as Dr. Scripture's book reveals. A mere statement of the facts will suffice. If the author has any explanation to offer, common fairness demands a suspension of judgment until he has been heard. If he has not, comment on the part of the reviewer is quite superfluous. Summarized the case stands thus. In Chapter XXI, Dr. Scripture has occasion to quote from Wundt's 'Human and Animal Psychology.' In these passages the English varies widely from that of the Creighton and Titchener translation of this work.¹ But throughout nearly the whole of Chapter XVII, where the author vaguely states that he 'follows' Wundt, the English is not only a translation of the German, but is, furthermore, identical with that of the published translation just mentioned, save for a few rare cases in which synonyms have been employed and the order slightly changed.² In the same chapter, even before the expression

The parallel passages are herewith given :

Thinking, Feeling, and Doing.

C. & T. trans. Wundt's Human and
Animal Psychology.

¹ Pages 276 ff. Pages 2 ff.

² Pages 226-38. Pages 372-80.

of intention to follow Wundt, occurs a sentence which is identical with one in the Creighton and Titchener translation.³ In another passage, a page in length, in which occurs no least suggestion of indebtedness of any kind, the language is absolutely identical with a portion of the Creighton and Titchener text.⁴ After completing the quotation cited in Note (1) on last page, he continues for several pages to follow Wundt, in a way which is much more nearly translation than paraphrase, and this with no intimation of obligation.⁵

The whole book, and especially the concluding chapter, is essentially a panegyric upon the 'new psychology,' by which the author means experimental psychology of the laboratory kind. In his contempt for what he is pleased to call 'arm-chair psychology,' Dr. Scripture is no more virulent than are such writers as Dr. Ward in their denunciations of Dr. Scripture's school. But there are surely many of us who feel that both parties represent a somewhat obstinate extremism, and that there is a very vigorous, hopeful movement which may properly claim for its endeavors the fortunately vague title of the new psychology. This movement, if it manifests no sympathy for the acrid strictures of Dr. Ward, is equally guiltless of any such cramped and one-sided view as that appearing in the words, if not the meaning, of Dr. Scripture's book. Despite their many shortcomings, the psychological works which the American press alone has produced in the last few years bear ample evidence to the existence of a thoroughly sound empirical spirit, which is ready to accept all facts that can present unquestionably trustworthy credentials, whether from Dr. Scripture's laboratory or his colleague's arm-chair, which has an eye to the vast extent of consciousness throughout the organic universe, its abnormal or unusual manifestations as well as its commoner forms, and which is not afraid to fail in framing and testing hypotheses for such facts as are already at hand; convinced that to search for facts without at the same time searching for their implications, is a shade less rational than the celebrated expedition after the Snark. Were Dr. Scripture's extremism to become legal tender, psychology would be well-nigh bankrupt, and his book is, perhaps, the best proof of this. In it we are, indeed, confronted by a "string of raw facts." We can afford to be grateful for everything the laboratories give us, and we may be as

Thinking, Feeling, and Doing,

C. & T. trans. Wundt's Human and
Animal Psychology.

³ Page 226. Page 372.

⁴ Pages 272-3 Pages 267-8.

⁵ Pages 278-81 Pages 6-7.

optimistic as we please in hoping for their future, but to convey to the public the impression that all other work is balderdash, and that we have anything but the crude beginnings of a science, is to lead the blind into a pit; and against this the reviewer, as an advocate of the laboratories, must heartily protest.

UNIVERSITY OF CHICAGO.

JAMES ROWLAND ANGELL.

Die Umwälzung der Wahrnehmungshypothesen durch die mechanische Methode. Nebst einem Beitrag über die Grenzen der physiologischen Psychologie. H. SCHWARZ. Leipzig, Duncker & Humblot, 1895. Pp. xx + 198, ii + 213.

Dr. Schwarz writes from the realistic point of view, and frankly avows his obligations to Uphues and Twardowski. Indeed, he goes so far as to say, in a note to page 93, that 'Die richtige Erkenntniss in der Erkenntnissfrage' will not be widespread until the views of these two philosophers have been generally accepted. Yet the historical analysis which he has here undertaken of the conditions under which the old naïve belief in the objective reality of colors and sounds was given up, is on the whole impartial, and will be read with profit by those who have not yet accepted the only true solution of the epistemological problem as propounded by Uphues, Twardowski and Schwarz.

The first section, entitled 'Das Problem des unmittelbaren Erkennens,' exhibits the displacement of the older scholastic theories as to the means whereby the outer object affects the cognizant subject, by the mechanical theories of Hobbes and Descartes. As representatives of scholasticism, Dr. Schwarz selects Suarez's theory of intermediate species, conceived as qualities in flight from object to subject; Thomas Aquinas' doctrine of a phantasm or 'fictum' evolved by the subject out of its own substance in the form of the perceived object; and Gabriel Biel's nominalistic repudiation of both in favor of an unexplained action from a distance by the object upon the subject. Hobbes originally held the still older view of Democritus, that material objects are perceived by means of material particles which they constantly throw off into space, and he attacked the species theory from that standpoint. Later he became acquainted with Galileo's doctrines and adopted a conception analogous to that now prevalent: that the outer object works upon the sense-organ by means of some form of motion. Descartes, a mathematician from the outset, was led to a similar conclusion by the desire to bring all departments of knowledge within the domain of mathematics; and this he saw could be done in the realm of psychology only by ex-

pressing all mental phenomena in terms of motion. Yet in both Hobbes and Descartes we find traces of older conceptions. To Hobbes' mind the modes of motion, whereby the outer object is made known to the subject, are possessed of the same mysterious representative function which the scholastics ascribed to the intermediate species: in some way the mental states they beget in the subject are to be conceived as copies of the outer object. Descartes practically holds to the scholastic doctrine of the 'fictum,' in that he denies of the impressions of sense all true reality; and he also holds Suarez's doctrine, that the real object can be directly cognized by an intellectual 'hapsis.'

The second section, entitled 'Das Problem der Sinnesqualitäten,' seeks to unravel the motives that led Hobbes and Descartes to deny the objective existence of colors and sounds. Hobbes can find in them no reality whatever, unless it be the reality that attaches to them as modes of brain motion; and this is the natural outcome of the attempt to exalt the mechanical method, the true object of which is to bring order into the flux of sensation by means of mathematical concepts, into a metaphysic. According to Descartes, sensations are accidents of the composite of body and soul which we call man, and their function is to guard it against dangers. Descartes' tendency to deny true reality of sensations and to allow them but an obscure and dim mode of existence, is traceable to the fact that sensations are incapable of being wrought into mathematical calculations; and this, to a mind of Descartes' type, was sufficient ground for ignoring them.

It is worthy of note that the mechanical method of modern science is not based alone upon the preference we accord touch sensations—from which our wave conceptions are for the most part drawn—but upon the fact that, by means of these conceptions, we can make the phenomena of color and sound intelligible and predictable. Otherwise it would remain conceivable that sciences of acoustics and optics might be developed which would deal with colors and sounds directly, without the intervention of such auxiliary conceptions. As it is, however, these sciences are sciences, not because they have been reduced to a *touch* basis, but because they have been reduced to a *mathematical* basis; and as no other mathematical basis can be found for them, we may safely assume that our present mechanical method is the final method of optics and acoustics.

The 'Beitrag' is entirely independent of the balance of the volume and is practically a critique of Exner's 'Entwurf zu einer physiologischen Erklärung der psychischen Erscheinungen,' which the

author is inclined to regard as the capstone of the great scientific structure begun by Galileo, Hobbes and Descartes . . . "It devolves, then, upon the philosopher and the psychologist to see to it that his science, in so far as it assumes the validity of other than mechanical conceptions, is not crushed, suffocated, by this crowning development of the scientific Weltauffassung."

The main force of Dr. Schwarz's criticism is directed against two of Exner's fundamental assumptions. If we grant, he argues, that cortical processes are always essentially the same in character, and are differentiated from one another only in intensity and locality, it is conceivable that they form the basis of affective consciousness, since it is capable of variation in two modes only—quality and intensity; but it is not possible to conceive them as the basis of sensations, since sensations are possessed of a third characteristic, outness or position in space, and for this there would remain no physiological expression. The objection cannot be evaded by regarding position in space as a mode of sensations. Furthermore, since sensation and feeling are themselves distinct series of conscious events, the physiological terms in which the one finds expression will not serve for the other. The attempt to reduce feeling to muscle sensation must be regarded as a failure.

Again, if we assume with Exner that coalescence of conscious states is due to coalescence of their cortical processes, we fail to understand the actual diversity of consciousness. We should expect that all coexistent cortical processes would coalesce with one another and consciousness would exhibit a constant progression from one total state to another, whereas, in fact, we find infinite diversity.

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W. R. NEWBOLD.

Monism as Connecting Religion and Science. ERNST HAECKEL. Eng. trans. by J. Gilchrist. New York, Macmillan, 1894. Pp. 117.

This address, delivered by the author at Altenburg on the seventy-fifth anniversary of the 'Naturforschende Gesellschaft des Oesterlandes,' sets forth a naturalistic Pantheism. It states in clear terms a monistic theory of the universe construed in a naturalistic manner. By Monism is meant "that there lives one spirit in all things, and that the whole cognizable world is constituted and has been developed in accordance with one common fundamental law." The author lays emphasis on the essential unity of inorganic and organic nature; the latter, he claims, having developed from the former at a comparatively late period, there being no absolute distinction between them any more than between animal and man. The author

then speaks of human knowledge, saying: "Similarly we regard the whole of human knowledge as a structural unity; in this sphere we refuse to accept the distinction usually drawn between the natural and the spiritual. The latter is only a part of the former (or *vice versa*); both are one." Haeckel seeks to prove this by arguments from both the subjective and objective standpoints. From the former he cites the evolution of knowledge in the human race, and mentions what he terms the advance from Anthropomorphism to Monism. From the latter or objective standpoint he uses as his proof the law of the conservation of energy and matter. Uniting energy and matter, he starts with 'animated atoms.' In this connection the author goes on to show the results of the evolution theory in the development of the organic from the inorganic, and consciousness from the former. "Immortality, in a scientific sense, is conservation of substance, therefore the same as conservation of energy as defined by physics or conservation of matter as defined by chemistry." God, he says, can be represented as 'the infinite sum of all natural forces.' Haeckel expects to be accused of materialism, but claims that this is a mere 'party word,' and that spiritualism would describe his theory quite as well. The address is Spinozism in the garb of modern science.

PRINCETON.

C. W. HODGE.

GENERAL.

Bemerkungen zum Begriff des Gegenstandes der Psychologie. R. AVENARIUS. Viertelj. f. wiss. Phil. Hefte II, IV, 1894; I, II, 1895.

The writer has undertaken through an analysis of experience in its most comprehensive sense to determine the essential character, relations, and extent of that special form of experience which we call psychical. As soon as we begin to reflect we find that our experience consists of two equally immediate and indispensable elements, an *ego*—including all that belongs to the so-called me, as thoughts, emotions and desires—in the midst of an *environment*—the complex commonly known in philosophy as the non-ego. These two elements can never be thought of as appearing separately; every actual or 'complete' experience must contain both.

Before proceeding to further analysis, it is important to show the fallacy contained in the division of experience into 'inner' and 'outer.' It is evident that this distinction does not exist in the immediate individual experience, but is derived from an interpretation of the experience of others. Among the constituents of my environment are beings who behave and express themselves as I do;

seek certain ends and avoid others as I do; in short, appear to hold exactly the same relation to their environment that I do to mine. I, therefore, conclude that they are in reality just such beings as I am. This conclusion is, however, nothing more than an hypothesis based on analogy, for the acts of my fellowmen must always remain, in so far as my immediate experience is concerned, mechanical processes like all other movements in my environment. And it is clear that, since analogy is my only ground for attributing to these acts a more than mechanical significance, in other words, for assuming that they belong to experiences like my own, I am not justified in introducing into my interpretation of these experiences any content or process that I do not find immediately present in my own. This, however, is just what is done, when instead of recognizing an ego and a non-ego as equally essential elements of another's experience, I 'intraject' the non-ego element into the ego and regard it as an 'inner' process or modification which I call a perception.

A complete experience in the sense above defined exists in reality only as an inseparable unity. Logically, on the other hand, we may divide it by abstracting from one of the elements or parts of the elements. In this case we have 'partial experiences' which, it is to be emphasized, are not realities, distinct from each other and from the complete experience, but logical fictions, or various ways of regarding one and the same experience. What we call physical experience, for example, is not a special kind of experience in the dualistic sense, but a logical abstraction in which we have agreed, for the purpose in hand, to neglect the ego element. The question now takes the form, what partial experiences belong to Psychology? To answer briefly, those which stand in a relation of dependence upon the ego and are in a logical sense determined by this dependence. For example, a stone may be a partial experience in the sense that we abstract from its relations to other elements of the environment and from its relation to the ego. It is then a subject of Geology or Physics but not of Psychology. If, however, we think of the same stone as an element of an experience which we regard in the light of its dependence on the ego, as in a case of memory, then we have a partial experience belonging to Psychology. In short, any experience may belong to Psychology, if the way in which we look at it is in its relation of dependence upon the ego. We may go further. The condition of this dependence is a modification in a central nervous system; hence we may substitute for ego, central nervous system, and our definition becomes 'the subject of Psychology is experience in general in so far as it is regarded as dependent on a central

nervous system.' Not only is it difficult, however, to determine the limits which are set to the actual existence of such central nervous systems; but when we extend the inquiry beyond actual to potential existence, we shall find that we are entirely unable to fix the point where we can say, the possibility of the evolution of such a system is here forever excluded. The question of the extent of psychical experience leads us beyond the limits of our special science.

LEIPZIG.

CHARLES H. JUDD.

Der Begriff der Seele in der empirischen Psychologie. JOSEF SCHUCHTER.
Brixen, 1895. Pp. 39.

The author makes the usual distinction between rational and empirical psychology, claiming, however, that after empirical psychology has studied conscious phenomena, it can study the nature of the soul on the basis of her empirical facts and laws, keeping to the empirical method. He claims that most authors agree as to this conception of empirical psychology, but some would exclude all questions as to the soul. To this the author objects, as psychology, he claims, would thus lose its pedagogic value and worth as a propædæutic to metaphysical questions. The motive for his work is the questions: "Has empirical psychology grounds for taking the concept of the soul into its domain?" And: "How can this be done in harmony with its method?" Though these questions were the motive for the work, the author distinctly states that they have not affected its form, which, rather than being an answer to these questions, is an attempt to reach a concept of the soul, and to show that empirical psychology furnishes material for the solution of the question; an attempt in which the author frequently leaves the sphere of experience altogether. First the author takes up consciousness, and after describing it says that it is the business of empirical psychology to seek to define it. An analytic definition being impossible, because there is no more ultimate or simple term by which to define it, a 'synthetic' or 'genetic' definition is what is to be sought. This, he claims, is to inquire after the conditions and existence of consciousness; and this, he claims, is equivalent to the problem of the soul. So empirical psychology leads to this problem, and can also give 'hints' as to its solution. The author proceeds to show these, going on with the study of consciousness. Consciousness is the universal form which accompanies mental phenomena. The form has been identified with the content and lost in it. We cannot limit consciousness to this interpretation. When we regard it as something which can in thought be abstracted from its

content, we may ask, what is the abstracting subject? Consciousness thus divides into subject and object, and this same analytic activity is the same as the synthetic activity which binds together conscious phenomena. This is the soul, which is, therefore, an activity. The author discusses the question of the relation of soul and body, and concludes that the concept of the unconscious, being a positive one, mediates between soul and body. He holds Aristotle's idea that the soul is the entelechy of the body, and to be conceived as a potency developing into actuality. But as what has more and richer content cannot be developed from what has less, the idea of God as the source of all things, is to be presupposed.

The work is concluded with a discussion of the question of immortality, into which, for want of space, I cannot go. His argument is from the development of the soul in self-dependence and from certain ideas, as, for example, the good. Because these ideas have a psychological side, the author claims all that for empirical psychology, not making a distinction between their psychologic existence in consciousness and the question of their meaning, which is metaphysical. Thus it can be seen, all along the discussion, that he has not kept within the sphere of empirical psychology.

The Integration of Mind. EDMUND MONTGOMERY. *Mind*, Vol. 4, No. 15. Pp. 307-319.

What we perceive has only momentary existence. Whatever made up the content of consciousness, the preceding moment has forever vanished out of existence, and the following moment is as yet non-existent. That which seems to endure in identity can never be that which is consciously present to us. Even could we obtain a 'punctum stans,' there would still arise the question as to the hidden source under the totality of conscious phenomena. The most important problem in philosophy, then, is that of the nature of the 'matrix' of our conscious phenomena. "How does conscious experience, gathered piecemeal and erratically in the course of life, become so integrated in latency as to form a more or less systematized potential totality, the integrant constituents of which are ever ready, when occasion occurs, to emerge duly ordered into present awareness?" The conscious states, being utterly evanescent, cannot give the permanent substratum for the integration, which must take place, therefore, outside consciousness; and the question is whether, having no other data than those of the moment of conscious awareness, we can infer therefrom the existence and nature of what underlies the integration of conscious experience.

Now, it is clear that our 'moment of conscious awareness' cannot affect other beings. We do not perceive one another's conscious states; and if we consisted only of what consciously appears, we should be imperceptible to one another. And if things consisted in the awareness of a supreme intelligence, they would also be imperceptible. These considerations give proof of the existence of a perceptibly revealed sphere of extra conscious existents, and the characteristics of our percepts symbolically represent these. Now, the author asks whether these characteristics of our bodily organism do not give us information regarding the integration of experience. There is the strongest evidence, the author claims, that conscious states are the outcome of brain activity. He cites in proof of this the dependence of special conscious states on special portions of the brain; also the fact that physiological psychology presupposes that 'sense-stimulating' and 'sense-stimulated' agents exist; that the former affect the latter, arousing percepts, and that modifications of the stimuli are followed by modifications of brain activity and then of consciousness. The author reaches the conclusion that "the specific activities of extra-conscious existents stimulate in definite ways the organic sensibility of our own entire conscious being. This specifically attained action and reaction it is which gives rise to the corresponding conscious states." "Consciousness, emerging thus solely under the functional activity of what is perceptually realized as brain structure, seems to be, therefore, exclusively an outcome of it." In the remainder of the article, which lack of space forbids us to outline, the author seeks to show how, by the same organic process in a progressive development, nerve structure has become integrated, accompanied by a corresponding integration of consciousness.

C. W. HODGE.

SOCIAL PSYCHOLOGY.

- (1) *L'Année sociologique*, 1894. M. LAPIE. *Revue de Métaphysique et de Morale*. May, 1895.
- (2) *La Logique sociale*. G. TARDE. Paris, Alcan, 1895. Pp. XIV + 464.

Lapie claims that the general characteristic of sociological discussion during the past year is an increasing tendency to emphasize the psychological factors in history and the psychological, as contrasted with the biological, point of view for studying and explaining social facts. This finds illustration (a) in the growing dissatisfaction with the definition of society as an organism. Tarde urges that the

proper analogue is not an organism in general but a particular organ, the brain. Pioger (*La vie sociale, la morale, et le progrès*) would give the specific difference by calling it a *social organism*. Novicow (*Les gaspillages des sociétés modernes*) maintains that societies are rather to be interpreted as *êtres spirituels*. They are groups of ideas and sentiments. (b) The psychological tendency is seen in various definitions of what constitutes a sociological fact. Durkheim (see this REVIEW for May, 1895,) specifies a certain class of psychical facts, viz., those due to constraint. Lacombe (*De l'histoire considérée comme science*) regards as social those events which are either causes or effects of institutions. Lapie would correct this by pointing out that any idea becomes a social fact as soon as it is transmitted and so finds an echo in the consciousness of others. Tarde considers desires, and beliefs, if imitated, to be the central theme for social study. (c) The causes for social facts are to be sought in psychology. Le Bon (*Les lois psychologiques de l'évolution des peuples*) holds that the *character* creates the destiny of a people. Novicow and Lacombe maintain explicitly that social facts are explained psychologically and not otherwise—'wants act in history,' says the latter, 'not as biologically real but as felt solicitations' (Cf. Ward's *The Psychic Factor*). Durkheim is the most important objector to the principle of seeking psychological explanation, urging that the cause of a social fact can be only a social fact. I think, however, that the apparent opposition is due to the differing conceptions of the explanation sought. We explain by pointing out the preceding fact, or by analyzing the given fact into its elements (psychological processes). Each has its place.

M. Tarde's work supplements his preceding studies (*Lois de l'imitation*, etc.), and, as is indicated by its title, is a striking example of the present movement in French sociology traced by Lapie. Imitation is not the sole social fact. It is only the social memory, and memory while the foundation is not the edifice. The object of the book is 'to show the judgment and will at work in society,' to study the variations and inter-relations of beliefs and desires. As Kant's logic asked, 'How is knowledge possible?' so social logic asks, 'How is society possible?' and as Kant discovered certain categories necessary for the individual, so there are essentials for the possibility of society,—'permanent, necessary conditions of its more or less stable equilibrium.' These are either (a) logical, viz., language and the deity, or (b) teleological, good and evil. As space-time and matter-force are concepts for harmonizing sensations for the individual, so language is a medium for harmonizing perceptions, and the

deity for harmonizing thoughts and wills in society. Society began when the judgments and wills of individuals came consciously into contact, in agreement or discord, and there resulted a co-ordination of ideas and tendencies of the primitive family,—religion and domestic government. To understand the social processes we need then first a study of the laws which govern the conflict or coalescence of beliefs of varying degrees of strength. This yields quite a different classification of judgments from that of the traditional logic and a correspondingly different syllogism; and the conditions here analyzed are those most frequent in daily life and even scientific induction, for here the process is not one of drawing an inference from premises of equal certainty, but of a cumulative series of proofs resulting in increasing probability and stronger belief.

After a very suggestive treatment of this new logic of beliefs in his first chapter the author goes on to elaborate his doctrine of the social categories and to present analogies, some fruitful, some rather far-fetched (*e. g.*, when glory as social phenomenon is compared to self-consciousness) between the social and the individualistic phases of consciousness. The application of the principles developed to language, religion, the sentiments of the heart, political economy and art occupies the second half of the work. The role of imitation in all these departments is emphasized, but perhaps as a result in part of the criticisms on his earlier work, it is not over-worked, and the psychologist may find much valuable material in these chapters.

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J. H. TUFTS.

NEUROLOGY.

Die Localisationstheorie Angewandt auf psychologische Probleme. Beispiel: Warum sind wir "zerstreut"? G. HIRTH. Einleitung von Ludwig Edinger. Zweite vermehrte Auflage. München, Hirth, 1895. Pp. XXIV + 112.

The extraordinary progress of minute histology of the nervous system within the last decade could not help arousing the interest of many speculative minds. While numerous attempts are made to fill the wide gap between the scanty data of localisation of motor and sensory areas of the cerebral cortex, and a possible localisation of the correlates of mental activity, it must become exceedingly difficult for one not following the strictly anatomical literature, to find out where the well established facts are at an end and where speculation looses touch with actual observation. Many papers are indeed so confusing that the present little work can be considered a very

fair exception, inasmuch as it does not often overstep the standpoint of speculation on a fairly sober basis. A few sanguine statements with regard to the correlation of anatomical structure and psychical function could easily be enumerated, but on the whole there is such a sound spirit pervading the little book that an occasional lack of conservatism should not prejudice even the pedantic reader. It may be that psychologists will not agree with many of Hirth's opinions; the remarks are in accordance with the monistic tendencies represented especially by the physicians of our days. As such they would indeed be worth much attention, and, if necessary, worth a thorough discussion by competent psychologists.

Hirth admits that, at present, it is impossible to construct even in outlines the process of thinking from our anatomical and physiological findings; but it seems certain that the problem of localisation and the development of the various systems of the nervous apparatus (Flechsig) will be a fertile field of study applicable also to the development of psychical systems.

In its development, every 'system' (Merksystem) has what might be called its special 'temperament', peculiarities in nutrition, tonus, energy and fatigue, owing to hereditary and developmental influences. This holds both for the well established systems in the specific areas of the cerebral cortex and for the material substratum of 'associative processes.' Flechsig's thought centers (a rather unfortunate term) may contain the most complicated ones of these systems; by all means we must maintain that, in some way, every mental process must have its localisation limited to some system of nerve-elements. The differences in the growth and ultimate architecture and functional energy of each system and the individual concatenation of the systems determines the individuality of the person. While lungs and kidneys and the heart are phylogenetically very old organs, their formation is less subject to variations; the older the systems are that form the basis of psychical correlates, the less they are subject to malformation, while the youngest acquisitions are most subtle and most perishable (the 'Achillesferse' of the human mind). The growth of these systems cannot be conceived without an hereditary disposition in the growth of the corresponding nerve-elements. The hereditary progress of the biological delusion (perhaps better the delusion of living beings) is next treated in a very attractive way; the outward projection, etc., the fact that normal brain activity is not felt as such any more than the activity of other organs, which too, we know by its results only; further the formation of pathological delusions, the necessity of the constant

correction of the 'Ichsynthese' by the stimuli from the periphery, the negation of a special apparatus or function of consciousness, the independent thought of special sensoria, unconscious parallel processes, polyideism, etc. The position taken in this sketch is next tested by, or applied to, the phenomenon of 'Zerstreuung' (lack of concentration). It would not be fair to attempt a complete reproduction of the little pamphlet of 112 pages of text and 24 pages of introduction including Edinger's review of the first edition; it would be impossible to do it justice. The temptation is greater to give an outline of the actually available data of neurology which we could recognize as the present status with all its conflicts and problems. But for this, the limits of a review are too narrow.

The little book of Hirth may be heartily recommended as a very suggestive program of interesting psychological problems.

Sur les connexions du ruban de Reil avec la corticalité cérébrale. M. et Mme J. DEJERINE. Extrait des comptes rendus des séances de la Société de Biologie. Séance du 6 Avril, 1895.

During the last three years the question of the anatomy of the fillet has been the subject of an animated discussion. The course of the fibres originating in the nuclei of Goll and Burdach forming the central sensory path has become known through Edinger and Flechsig (1885). Before this, the view of Meynert was generally adopted; the sensory fibres, coming from the nuclei mentioned, would decussate and, joining the pyramidal tract, form the external bundle of the crus cerebri and from there enter the posterior limb of the internal capsule (carrefour sensitif of Charcot). Flechsig and Edinger showed that the fibres decussate, but instead of joining the pyramids, form the interolivary stratum and can be followed into what is known as mesial fillet. Forel (1877) followed the mesial fillet partly into the anterior corpus quadrigeminum (obere Schleife), partly into the optic thalamus (Thalamus-Schleife). Flechsig and his followers maintained (1881) that a part could be followed into the cortex of the parietal lobe, whereas Monakow (1884) furnished facts in favor of the view that the connection was not direct, but by means of the optic thalamus. For a rather full and excellently illustrated account of the anatomy of the fillet including the literature up to 1892 the reader may be referred to the Illustrations of the Mid- and Hind-Brain by Alexander Bruce.

The discussion has, of late, been led by Flechsig and Hösel on the one side, who, on ground of recent pathological observation, claimed a direct connection of the fillet with the cerebral cortex, and

by von Monakow and Mahaim on the other side, who bring material in favor of an indirect connection by means of the optic thalamus.

M. and Mme Dejerine have no less than 9 cases in which the fillet was involved and moreover 19 cases in which there were extensive lesions of the central and parietal convolutions, all examined by the method of serial sections. The following results may be gathered from their communications :

1. Lesion of the nuclei of Goll and Burdach (2 cases) are followed by (ascending) degeneration of the nerve-processes of their cells, *i. e.*, of the fillet. The degeneration cannot be followed beyond the subthalamus region and the inferior part of the optic thalamus.

2. Lesion of the fillet in the region of the pons (3 cases) is followed by ascending degeneration (which can be followed only as far as the anterior corpora quadrigemina and the inferior part of the optic thalamus, leaving completely intact the fibres passing through the lenticular nucleus, the nucleus of Luys, the globus pallidus, and the commissure of Meynert), and by descending degeneration (involving the interolivary stratum of the same side and the arcuate fibres and nuclei of Goll and Burdach of the other side.)

3. Lesion of the fillet in the region of the thalamus (4 cases) is followed by a small atrophy of the mesial fillet, diminishing downwards, as we approach the nuclei of Goll and Burdach and identical with the retrograde atrophy described by Forel (*atrophie cellulipète*). There is no reason to believe that the cells of the fibres that atrophy apparently downward must be located in the thalami; at any rate most of the fibres of the fillet come from the cells of the nuclei of Goll and Burdach.

4. Lesion of the motor and parietal area (19 cases, some of them with atrophy of the *Linsenschleife*), even when of old standing, do not affect in the least the mesial fillet.

This is a very complete refutation of the direct cortical termination as maintained by Flechsig and Hösel and their followers, and a complete corroboration of the views of Von Monakow and Mahaim.

Sur le mécanisme de l'agraphie dans l'aphasie motrice corticale. CH. MIRALLIÉ. *Compt. rend. d. de la Soc. de Biol.* 30 Mars, 1895.

In motor cortical aphasia the disorders of spontaneous writing and of writing to dictation are proportional to those of the language spoken, while copying is not interfered with. For the explanation of this agraphia, Exner, Charcot and Pitres claim a special writing center in the foot of the left second frontal gyrus; Wernicke, Gowers, Lichtheim, Dejerine, Oppenheim and others say, however, that such

a center does not exist. If Charcot's view be correct, the patient is able to compound the words with letters written on cards, an action that does not involve any movements of writing. If, however, the agraphia exists because the idea of the word is altered in the 'language intérieur,' the patient cannot arouse the corresponding optic image (Dejerine) and he cannot put together the letters to form the word. The application of this test to 10 cases led to the following conclusions :

1. In cortical motor aphasia, the agraphia does not consist in the impossibility of tracing the letters on the paper and of grouping them in words. It comes from the impossibility of reviving in the mental language the conception of the letter and words, *i. e.*, from an alteration of the conception of the word itself. For this reason, a patient with agraphia cannot write better with the letters already written than when he has a pen in his hand.

2. Agraphia is therefore not the result of a motor disorder, of a loss of graphic memories ; hence it is not due to an alteration of a special motor graphic center specialized for the movements of the hand.

These views can easily be proven with a type-writing machine. The patient can write just as little with the machine as with the pen, although the type-writer does not require special writing movements.

The daily life of a protozoan: A study in comparative psycho-physiology.

C. F. HODGE and H. A. AIKINS. *Am. J. of Psychology*, Vol. VI, No. 4.

With a very ingenious method of registration the authors recorded the events in the life of various protozoans, especially Vorticella. They made the observations with the microscope, the animal being kept in a current of water from an aquarium containing ample food. The fourteen experiments lasted from a few hours to five and a quarter days, and the records are kept of the occurrence of stalk contractions, reproductive phases and variations of the frequency of vesicle contractions, and of temperature and barometric pressure. The result was that as long as food was abundant, the Vorticella would move the cilia and reproduce by division without the intervention of a resting stage. Light or sounds of any kind as well as sudden changes of temperature (iced water), when not accompanied by a perceptible jar of the microscope, would not elicit reactions of any kind, whereas the sensibility to touch was manifested by very prompt reactions as selection of food and contraction of the stalk at the touch of an enemy or following a sudden jar.

The universe must consist for a Vorticella of a series of touches, possibly also of tastes and smells. The absence of fatigue seems to show that protoplasm may be formed as fast as used under favorable conditions of nutrition, and that with equally good facilities for the removal of decomposition products, these may not accumulate in amounts sufficient to interfere with activity.

Sur les connexions du noyau rouge avec la corticalité cérébrale. M. et Mme J. DEJERINE. Soc. de Biol., séance du 30 Mars. 1895.
Recherches sur la structure anatomique du noyau rouge et ses connexions avec le pédoncule cérébelleux supérieur. ALBERT MAHAIM. Mem. de l'Acad. Roy. de Méd. de Belgique, Tome XIII, 6ème fasc.

Mahaim's investigation is based on the results of the experimental degeneration method in the brain of rabbits. He finds that, contrary to the opinion of Bechterew, Marchi, etc., the superior cerebellar peduncle has its origin in the red nucleus and ends in the dentate body and the hemisphere of the cerebellum. A small portion does not decussate in the raphe of the tegmentum.

In the red nucleus of the rodents there is a small group of little cells which has nothing to do with the opposite cerebellar peduncle (nucleus minimus, at the junction of the anterior and middle third). The non-decussating fibres of the superior peduncle are derived from the cells of the anterior third of the red nucleus, the decussating ones from the middle and posterior third. The fibres from the middle portion give off very strong collaterals into the tegmentum.

The findings of Dr. and Mrs. Dejerine in brains with old lesions go much further. The atrophy of one cerebellar hemisphere associated with atrophy of the opposite cerebral hemisphere is a familiar occurrence. The question whether there is a direct connection between the superior cerebellar peduncle and the cerebral cortex, and whether the red nucleus has any connection with the cerebral cortex, has not been decided by the cases described in the literature.

It is certain that the superior cerebellar peduncle degenerates together with the cells of the red nucleus of the opposite side, when the dentate body of the cerebellum is destroyed; if, however, only the cortex of one cerebellar hemisphere is destroyed (cases of Menzel, Arndt and Dejerine) and the dentate body is not involved, superior peduncle and red nucleus remain intact: hence, there is no direct connection between the cerebellar cortex and the red nucleus. As to the connection between red nucleus and cerebral cortex the following facts are available: Mendel and Witkowsky reported degeneration of the red nucleus after lesion of the optic thalamus. The

cases of Flechsig and Hösel, Mahaim, Monakow and one of Dejerine's, old cortical and sub-cortical defects, can hardly be used for the decision of the problem because the degeneration of the red nucleus might be an indirect degeneration (Mingazzini), as all these brains had been affected in early childhood. Now, Dejerine is able to describe a case of cortical softening of the whole external aspect of the hemisphere and of the orbital surface of the frontal lobe, without any implication of the basal ganglia. The lesion was of eleven years' standing in a man of fifty-three, so that indirect degenerations would be very improbable. Besides other very remarkable degenerations which make the case a perfectly unique one, D. found degeneration of the fibres that enter the red nucleus from above. Hence, the connection between cerebral cortex and cerebellar cortex is formed by three neurons at least:

1. Cells in the cerebral cortex (largely the parietal lobe) with fibres radiating into the red nucleus.
2. Cells of red nucleus with processes forming the (decussating) superior cerebellar peduncle which ends in the dentate body of the cerebellum.
3. Cells of the dentate body sending fibres into the cerebellar cortex.

Sur une forme spéciale d' hémianopsie fonctionnelle dans la neurasthénie et la névrose traumatique. DEJERINE et VIALET. Société de biologie, séance du 28 Juillet, 1894.

Dejerine and his pupil Vialet (who died quite recently in the beginning of a brilliant career) publish two cases of neurasthenia worth knowing on account of the existence of a right homonymous hemianopsia associated with varying constriction of the remaining left fields. Their conclusions are as follows:

1. In certain neuroses, such as neurasthenia and traumatic neuroses, a persistent functional hemianopsia may occur.
2. While this form of hemianopsia does not offer very marked characteristics, it is generally distinguished by the variability of the limits of the preserved visual field.
3. Its diagnostic and prognostic value is the same as that of the constriction of the visual field.
4. Its medico-legal importance is considerable, as it cannot be simulated.

It is well to remember in this connection the case of bilateral hemianopsia inferior described by Dr. A. Hoche.¹ A woman of

¹ *Doppelseitige Hemianopsia inferior und andere sensorisch-sensible Störungen bei einer functionellen Psychose*, von Dr. A. Hoche. Arch. f. Psychiat., Bd. XXIII.

twenty-seven was taken with melancholia soon after the birth of a child; she had almost complete analgesia, loss of taste, loss of smell with hallucinations of smell, double hemianopsia of both lower quadrants on both sides, with hallucinations in the upper quadrants and peculiar photismata in the lower (blind) quadrants; within five weeks she improved and made a complete recovery. This case shows clearly that every central lesion of vision can be psychogenous and that the psychogenous or at least functional character is not limited to the constriction of the field of vision or to amblyopia hysterica.

HOSPITAL, ILLS.

A. MEYER.

The Localization of Cutaneous and Muscular Sensations and Memories.

C. L. DANA. (Reprinted from Jour. of Nerv. and Ment. Dis., Dec., 1894.) New York: The Alliance Press. Pp. 27.

Dr. Dana collates evidence in favor of attributing sensory functions to the central cerebral convolutions. After citing some experimental data, he gives in detail the record of twenty-five clinical cases bearing on the question. In each of these the motor symptoms were accompanied by some sensory disturbance, the centres affected being located in the central convolutions. While many of these cases do not fulfil the most rigid requirements, still they furnish a certain amount of positive evidence to supplement the others. The writer does not attempt a discussion of the opposing evidence, but remarks that the number of "cases in which cortical injury occurs without apparent sensory disturbance . . . become yearly less." Admitting 'the sensory functions of the so-called motor cortex,' the question arises as to the nature of that function. Dr. Dana points out that in the great majority of cases the sensory functions lost are *localization* and 'active touch'; these are really associative processes, depending respectively on tactile, and motor and tactile memories; they are "each associated with the special cortical motor centre for the particular part" involved. He concludes, therefore, that "muscular memories or association processes are represented, measurably at least, in the motor area." Hence the motor cortex is to be regarded as a 'sensory-memory-motor' organ.

Nachprüfung des der Theorie vom buchstabirenden Lesen und Schreiben zu Grunde liegenden Falles von Sprachstörung. R. SOMMER. Centralb. f. Nerven- u. Psychi., 1894, N. F., IV, 113-137.

Dr. Sommer gives the record of some observations made by himself on a peculiar case of traumatic aphasia already reported upon by Prof. Grashey, with conclusions which differ from those deduced by the latter. The subject, Voit, fell from a ladder in 1885, strik-

ing on the left side of his head. He gradually recovered his physical health, and at the time of Sommer's examination had resumed his duties as worker in a brewery. The acute amnesia present at the time of Grashey's experiments had almost disappeared, but the aphasia remained. He was unable to name any object shown him without first writing its name. It was the act of writing, rather than the sight of the written word, that gave rise to the act of perception, as shown by the following: (1) Voit could name the object after going through the motions of writing, without marking, or when the hand that traced was concealed from his view; if his hands were held he would trace the letters with his feet, or even with his tongue, and succeed in getting the name; but if all these members were held fast he was unable to 'find' the word. (2) If the initial letter of the name was shown him among others, he was unable to identify it as such. The direct path between the optic and acoustic centres had apparently been interrupted, and the connection was supplied by a path through the visual motor centre.

Voit's mathematical powers were limited to multiplication of one-place numbers, which he performed rapidly, and simple addition and subtraction, which required some time.

The experiment was made of placing before him two objects belonging to a common genus; even when prevented from writing, and unable to 'find' their names, he signified (by nodding) that he recognized a connection or common ground between them. These results seem to show that "the *centre of ideation* (Begriffscentrum) is only the collective name for a number of different processes which may take place in quite different parts of the brain."

The case is important as a proof of the existence of a direct connection between the centre for the perception of objects (Centrum der Objectsvorstellungen) and that for the perception of graphic movements, which have been considered as connected only through the auditory centre. It also demonstrates, according to Dr. Sommer, that one part of an idea-complex may be lost without the connections between the rest being disturbed, and without the idea itself suffering any vital injury; thought may exist without language, in the case of both sense objects and ideas.

H. C. WARREN.

VISION.

La mesure des illusions visuelles chez les enfants. A. BINET. *Revue philosophique*, XX, 11-25. July, 1895.

The illusion of Müller-Lyer was the one chosen for measurement. One of its figures (B, the apparently shorter when both are really of equal length) was drawn in different lengths upon all but one of the right-hand pages of an album; upon the outer half of the last page, which could be unfolded wider than the others, was drawn the other figure (A, the apparently longer). A could then be compared successively with the different lengths of B, and one of the latter selected which should appear to be of the same length as A. Two such albums were constructed, showing the illusion on two different scales. Measurements were made upon 60 school children of the average age of 12, and upon 45 of the average age of 9 years. Results: (1) The illusion is stronger for the figures drawn on the smaller scale than for the larger ones. (2) The degree of the illusion depends on the order in which the lines are compared; it is greater when the series of figures B is followed in the order of decreasing rather than of increasing lengths. (3) The total illusion is the product of two illusions; namely, of the apparent lengthening of the line produced by the obliques at its ends in A and of the apparent shortening of the line produced by the obliques in B. These two effects are not of equal force, as can be shown by comparing each of the figures, A and B, with a series of straight lines. When A is 2 cm. long, B must be on the average 0.57 cm. longer, in order to appear of the same length. As compared with straight lines, A (2 cm.) shows an apparent lengthening of 0.51 cm.; B (2.57 cm.) shows an apparent shortening of only 0.13 cm. (4) The children have in general a vague consciousness of the illusion. (5) The illusion is stronger with children of 9 than with those of 12 years. For the former, with A 10 cm. long, there is an average apparent difference of 2.55 cm.; with A 2 cm. long, of 0.75 cm. For the latter, with A 10 cm., the apparent difference is 1.88 cm.; with A 2 cm., 0.57. The individual variation from these averages is considerable, reaching (for example) an average of 1.05 cm. for the younger pupils, with the larger A, and the series B taken in increasing order; which shows that the illusion varies greatly in strength for different individuals.

BROWN UNIVERSITY.

E. B. DELABARRE.

Congenital Night-Blindness and Pigmentary Degeneration. COLMAN W. CUTLER. *Archives of Ophthalmology*, XXIV, 313-333.

König's identification of the distribution of brightness in the spectrum of the totally color-blind, and of the normal eye in a faint

light, with the absorption of the rod-pigment, which led to the self-evident consequence that the totally color-blind are rod-seers, as v. Kries puts it (*Ztsch. f. Psych.*, IX, 115)—a conclusion at which I had already arrived from theoretical considerations—renders any additional information as to night-blindness of peculiar interest. While the totally color-blind see with nothing but the rods, the night-blind evidently must have defective rods,—rods at least in which the rod-pigment fails to appear in accordance with the requirement of night-vision. This would doubtless be owing to a defective structure in the pigment-epithelium; and, in fact, Cutler finds it most probable, from anatomical considerations, that the defect, when congenital, is not of inflammatory origin, but is owing to some malformation in the pigment epithelium. This distinctly adds confirmation to the recent views on this subject. The defect has also this connection with color-blindness—that it is inherited, and that it is far more common in men than in women. It is of rare occurrence, only 54 well-described cases are recorded; of these, only two are isolated, the rest occurring in only ten different families; and there are 36 cases of males to only 18 of females. In two families five different generations have been afflicted in this way; in one the transmission has twice carried over two generations, the females being exempt; and in one, eight out of thirteen males all had it, the females again being exempt. It is also a significant fact that, while the fields of vision for white, red and green remain unchanged, that for blue, in the cases examined by Dr. Cutler, was in every instance contracted.

Ueber die percipirende Schicht der Netzhaut beim Menschen. W. KOSTER. *Arch. f. Ophth.*, XLI (1), 1-27. 1895.

Koster finds himself unable to obtain a double shadow of a blood-vessel upon the retina by Prof. König's method, and Prof. Leber, of Heidelberg, as well. The double shadows they obtain, indeed, by H. Müller's first method for making the blood-vessels visible,—namely, if they concentrate light upon the sclerotic coat of the eye in two adjacent points by means of two lenses,—but they are not able to perceive that the distance between the two shadows varies when the light employed consists of the successive colors of the spectrum. Koster computes the ratio of the distance between two red shadows to that between two blue shadows, due to the difference in refrangibility of red and blue light, when König's method is made use of, and finds it to be not, indeed, a negligible quantity, 50:51, but less than the difference obtained by König by

observation, 22:19, and *in the opposite sense*; the different refrangibility of red and blue light would therefore have the effect of masking part of the influence of the distance apart of the different perceptive layers, if such exist, and hence could not be made use of to explain the phenomenon observed by König, even if it were sufficient in amount. [Koster, however, overlooks the fact pointed out in this Journal (II, 394), that the situation is changed according as the blood-vessel observed is between or not between the centres of the two overlapping images of the pupil, which are formed by the two holes in the moving diaphragm.] Koster awaits with impatience farther details in regard to König's experiment.

How Javal's Keratometer may be easily changed into a good Chromatometer for the Examination of Patients as to Color-Blindness. By CARL WEILAND. Arch. of Ophthalmology, XXIV, 3, 349-352.

Testing for color-blindness by means of colored worsteds is a proceeding of a very primitive character, and a spectroscope cannot readily be employed in the ordinary physician's office. The best instrument in which polarized light, a quartz plate, and a Nicol's prism are employed to this end is Chibret's chromatophotoptometer of 1885, but it is very expensive; and it is open to the objection that the color fields presented to the patient are very small and must be looked at with about 4D of accommodation. Dr. Weiland has devised a simple contrivance, consisting of a short tube holding a quartz plate and a Nicol's prism, which, if one has already a Javal's keratometer, would seem to accomplish everything that can be asked for; with the addition of a second Nicol, the brightness of the two complementary color fields can be varied, and a position of the instrument can be found in which they are, for the partially color-blind person, absolutely indistinguishable both in brightness and in color-tone. The instrument is first set for blue and yellow, which colors are both readily seen by the ordinary cases of color-blindness, and it is then rotated until the definite green or blue-green is found which the color-blind, of one or the other species, fails to distinguish from its complementary color,—seeing them both, in fact, whatever he may say if untrained, as grey. By a simple device dissimulation is rendered impossible. This most useful attachment can be furnished by Queen & Co., of Philadelphia.

BALTIMORE.

C. LADD FRANKLIN.

SKIN-SENSATION.

Ueber die Trugwahrnehmung zweier Punkte bei der Berührung eines Punktes der Haut. V. HENRI and GUY TAWNEY. *Philosophische Studien*, XI, 3.

The observation has been made that touching the skin with one point often gives rise to the perception of two. There are two solutions—that of Wundt and Müller, which is physiological; that of Camerer, Fechner and Nichols, psychological.

The subjects, Tawney and Stratton, were to observe and describe carefully the whole experience, besides answering 'one point,' 'two points' in the ordinary way. Two series were followed. In one the subject was ignorant of the nature and number of the stimuli; in the other he was informed. This gave the influence of knowledge and ignorance. The time between each experiment was not less than two minutes. There were two modes of experiment—pure double point illusions, where one point touched the skin; mixed, where two points touched. The volar side of the arm, midway between the wrist and elbow, gave the best results.

Results.—Sets 1 and 2. Pure illusions. Two points alternately touched with one point. The majority of tests showed the illusion. There were clear differences in the direction of the points and in their quality. Also the illusions stood in certain definite relations to the points touched. Sets 3 and 4: Pure and mixed. The relative number of illusions greater in the pure than in the mixed series. Illusion as to distance not beyond 20 mm. Qualitatively like points were more frequently felt than different. Sets 5 and 6: One point touched. Sometimes one, sometimes two points shown. Expectation influenced greatly the number and kind of illusions. The farther apart the points were expected to be, the farther apart they were felt. When two points were shown, the tendency was to feel two.

Conclusion: (1) The illusion is primarily bound up with the physiological processes. (2) The occurrence of the illusion is influenced in an important way by knowledge and expectation. This, however, does not explain all, e. g., the constant differences in direction (transversely or longitudinally) and quality. Also in certain cases the subject expected and saw one point only but felt two.

UNIV. OF CHICAGO.

S. F. McLENNAN.

Ueber Beziehungen zwischen geistiger Ermüdung und Empfindungsvermögen der Haut. H. GRIESBACH. *Archiv. für Hygiene*, Band 24, Heft 2, 1895.

Prof. Griesbach here reports a series of experiments in which he employed Weber's well-known method of measuring the fineness of

tactual discrimination with compass-points, as a means of determining the degree of mental fatigue. His subjects were, for the most part, scholars in the *Ober-Realschule* and *Gymnasium* in Mülhausen. A few supplementary series were also made on teachers, apprentices, factory-laborers and mechanics. Six areas of the hand and face were selected and the thresholds determined after periods of mental labor and rest. The uniform result was a marked increase in the diameter of the sensation-circles after effort, and a corresponding decrease after relaxation, and much more after rest. The following series will illustrate: 7 a. m., threshold 7 mm.; 8 a. m., after class in history, 12.5; 9 a. m., after Greek, 17; 10 a. m., after Bible-study, 9; 11 a. m., after Latin, 14; 12 m., after French, 17; 2 p. m., after two hours rest, 10.5. In the case of the laborers, whose work required far less mental effort, the increase is very much smaller, as appears by comparing the following series: 7 a. m., 10; 12 m., 11; 1.30 p. m., 10; 6 p. m., 11.5. On the ground of these results the writer criticises severely the German school program as much too exacting on the scholars.

LEIPZIG.

CHAS. H. JUDD.

HABIT AND ASSOCIATION.

Gewöhnung und Gewohnheit: eine psychologisch-pädagogische Monographie.

ARISTOTELES P. KURTIDIS. I-D. Athen, Konstantinidis, 1893.

Pp. 64.

After describing the phenomena of habit, the author discusses the process of its formation with special reference to volition and the problems of education. The formation of habit depends, in the main, on repetition of impression; the proposal to regard persistence of stimulus as a second coördinate factor is rejected. The possibility of any habituation at all rests on the tendency in the organism to spontaneous action and on its capacity to react on external impressions: which two, automatic actions and impressions from without, are the 'prime movers' in the process. Which predominates in a given case, depends on the strength and frequency of the external influences and on differences of temperament. Habits may be inherited. In the development of habit, the order may be from the unconscious to the conscious or the reverse. The usual account is given of the latter and the inference suggested that habitual criminals should be less severely punished than others. The force of habit has its limitations in hunger, sleep, fatigue, etc., and in other habits. Where habits conflict, one as a rule gives place gradually; sometimes,

however, an old habit is broken and a new one formed on the instant. It may be worth remarking that the passage in Aristotle appealed to in support of this last statement (*de mem.* 2, 451 b 14) is probably corrupt. What Aristotle probably said was that "sometimes movements which occur but once become more effectually consolidated into a habit than others which take place repeatedly. Hence," he continues, "some things which we see only once we remember better than other things which we see many times." Our author finds here a distinct anticipation of the Herbartian doctrine of the 'memory of feeling or of will.' This conception of a 'memory of the will' forms, in connection with the foregoing analysis, the principle of the 'pædagogical exposition,' which is for the most part thoroughly sensible, but contains nothing especially new or in this place noteworthy.

Die Zweckmässigkeit der psychischen Vorgänge als Wirkung der Vorstellungshemmung. OTTO LINDENBERG. Berlin, Duncker. 1894. Pp. 64.

The problem is, How are adaptations, which Darwinism explains for the species by natural selection, developed, under circumstances in which natural selection plays no part, in the individual? Limiting the enquiry to the psychological aspects of the problem, the present work seeks to show that the striving for an end tends of necessity to develop the means for its realization. The first to definitely state and treat the question was Lipps. And in principle his solution, namely, that the transition to the means is primarily due to a checking of the mental current, is correct. But he makes several unverifiable assumptions, and especially that the transition is brought about through its association of the means with the end inhibited. The theory to be presented differs essentially from that of Lipps in explaining the transition from association of the means with a presentation in consciousness.

The theory rests on the following general presuppositions. The facts of mental life are presentations and feelings. Feelings (will, pleasure and pain) arise from relations among presentations. Presentations arise productively from external stimuli and reproductively from contiguous association. These are the sole positive factors. Negatively they are determined by association, involving changes in the distribution of psychic force in the rise and fall of presentations, by the 'Enge des Bewusstseins' and by the inhibition of particular presentations by opposing presentations ('Vorstellungshemmung'). This last has very positive consequences. If, namely, in a strong

association $a-b$, b is inhibited, it follows, first, that the force of a in consciousness is strengthened, and, secondly, that the force which it would otherwise expend in reproducing b it now expends on other less strongly associated presentations. But among the latter those presentations will be in a situation specially favorable for reproduction which are either directly or indirectly 'means' ('*Mittelvorstellungen*') for the reproduction of b (m in $a-m$ and $m-b$, q in $a-q$ and $q-a$ or $q-m$, etc.). For not only will they be strengthened by the influence from a , but they retain for themselves the force which, but for the inhibition, they would use up in the process of reproducing b . It follows, therefore,—and this is the kernel of the theory—that the very inhibition of a presentation tends to increase the force, and that in proportion to its completeness, of the presentations which are the associative 'means' of the reproduction of the presentation inhibited. It is assumed, of course, that the requisite associations exist. If they do not, or if they are too weak, the means-presentation will be inoperative; and this sometimes happens. Moreover, as the production of all contrast-presentations must be explained by the same principle, special circumstances must favor the reproduction of the 'means' which lead to b rather than those which lead to other contrast-presentations. These circumstances, however, we have: the actual concomitants of a in consciousness are variable, whereas the associations $a-m$, etc., are constant.

The foregoing sufficiently explains the reproduction of b where b is a mere thought-presentation. The interesting case is where b is a sensation. Its usual antecedents are then motor-sensations produced by actual movement. How is the movement produced? The answer is: as in the preceding case, by the influence of inhibition. Here, namely, not only the end b but the 'means' m (motor sensations) is inhibited. But the inhibition of m strengthens, on the principle, its 'means' associates. But the best possible association exists between m and the unconscious psychic factors which cause the movement. These factors, therefore, will be strengthened. As they do not require and never attain sufficient strength to rise to consciousness, we may conclude that, if the reproductive activity really strives to produce motor-sensations, that striving must lead, under normal circumstances, to the production of those sensations. If in any case the process is repeated, the associations will be strengthened and finally result in a permanent psychical structure. Actions may then take place by association alone without inhibition. In considering the genesis of actions, however, we must distinguish three cases: (1) the negative influence of association—new associa-

tions and directions of reproductive activity negating the original striving; (2) the positive influence of association, tending to destroy the negative influence of customary association in cases where the end involves novelty of form; (3) the influence of inhibition, leading to the desire for a sensation which is 'means' to another sensation we desire. No influence on action must be ascribed to pleasure and pain. The phenomena of inhibition are not to be explained by the feelings but the feelings by them.

The theory thus outlined is ably worked out in the essay, and, *granting the general assumptions*, goes far to solve the problem. It should at least serve to call attention to a point in the psychology of habit and volition which has hitherto been too little appreciated.

SMITH COLLEGE.

H. N. GARDINER.

ETHICAL.

Vorlesungen über soziale Ethik. GEORG VON GIZYCKI. Aus seinem Nachlass herausgegeben von Lily von Gizycki. Berlin, 1895.

These posthumous lectures upon the subject of social ethics have special interest at this time because of the very recent death of Gizycki. They are an elaboration and application of the fundamental principle which underlies his general ethical system. This is the Greatest Happiness principle. He seeks to combine the concept of Oughtness with that of the Greatest Happiness. While acknowledging the full import of the categorical imperative, he insists that the only imperative is that which urges one ever to seek the greatest happiness of the greatest number. In the light of this guiding principle he reviews the present relations of capitalist and laborer, discussing questions of overproduction, strikes, woman and child labor, congestion of wealth, eight-hour laws, etc. Throughout he appears as the vigorous, undaunted, hopeful champion of the laborer. He especially urges the sympathetic and active coöperation of the brawn and brain laborers, insisting that theirs should be common cause, for the time is fast nearing when theirs will be a common lot and destiny. It is interesting to note the influence of our great American reformers upon his thought, as seen in the numerous quotations from Abraham Lincoln, William Lloyd Garrison, and Wendell Phillips. His hopes and plans for the future of the laborer, and the equality of privilege for all men, may be criticised as utopian, and yet cannot fail to impress the reader with their deep insight, large sympathies, and a profound belief in the possibilities of human nature. His work must indeed have left a

permanent impress upon German life and thought, and even legislation, as well as contributing valuable material to the general body of philosophic thought.

Une Étude réaliste de l'acte et ses conséquences Morales. T. WEBER.
Revue de Métaphysique et de Morale. Sept., 1894.

The writer insists that our acts have in them often an element of spontaneity. Some decisions seem to come as veritable inspirations, just as works of the genius are said to be inspired. Conduct, which is the result of habit, is wholly reasonable and subject to laws logical, physical and psychological, but our spontaneities are free. The act is the concrete expression of the individual nature and must be so accepted and so regarded in its concrete capacity, and not to be arbitrarily estimated according to general laws. The act, since it has happened, must have a satisfactory explanation to account for it; if this were not so, the act could never have been accomplished. And yet we are not relieved of responsibility because our acts are but the outer expression of an inner nature. We are responsible for what we are. And so we are to be law unto ourselves. Our acts bear their own sanction in their consequences.

This study neglects the consideration of any norm of conduct as affording a suitable criterion for the estimate of individual acts. The author feels that whatever is right. Morality without an ideal may summarily dismiss many perplexing questions to the convenient sphere of metaphysics, but yet the procedure is not permanently satisfying. This defect is felt throughout in reading this article.

Hétéronomie et Autonomie. E. DE HARTMANN. Revue de Métaphysique et de Morale. Mai, 1894.

The author indicates three possible situations concerning moral questions. That of pure autonomy, which disregards all heteronomous commands; that of pure heteronomy, which gives implicit obedience to a foreign will in all cases of doubt; and, finally, where the two principles act simultaneously, partly in agreement and partly in conflict. There may be an illusion where one thinks he is obeying a given law, when in reality he is but following a tendency of his own volition; or, on the other hand, he may think he is acting solely by autonomous determination, when he is really following that heteronomy due to his education, or through the unconscious fear of heteronomous authority, which is the rule of his decisions. Heteronomy may be of various kinds. It may be immanent in the

social life, becoming in time crystallized into a heteronomy purely legal and exterior. But even in this the individual has a part in formulating law, for this is but the integration of all morally autonomous acts of the many individual wills. The heteronomy, moreover, of a present generation was the autonomy of ancestors in former generations, and is an autonomy to the present so far as there exists an organic oneness with the past, inasmuch as they in common participate in the absolute reason. There is also a transcendent heteronomy looking to the will of the Supreme Being. This is more akin to autonomy than to the immanent heteronomy formulated in judicial systems. For if the absolute being which determines the objective moral ends is none other than the ego itself in its veritable essence, then the ends thus ordained become individual in a peculiar sense. The origin of transcendent heteronomy, historically considered, may be traced to the expression, through the prophets of different ages, of the popular autonomy at each period of civilization. There is a danger lest the true character of transcendent heteronomy, being discovered, it shall lead to the disclaiming of all obligation. This danger is, however, offset by the laws in which immanent heteronomy is formulated, compelling obedience by appropriate sanction; and thus absolute disorganization of society is averted. There has been a moral progress, historically, from the eudemonism of the ancients, though the heteronomy of the middle ages, to the autonomy ushered in with Kant and Fichte. While autonomy differs from heteronomy only as regards form, it differs from eudemonism in both matter and form. The value of heteronomy is that of a propaedeutic to the final stage of autonomy. The proper work of Church and State, therefore, is not to educate the people to childish obedience of heteronomous commands, but rather to prepare them by appropriate training for the exercise of a true autonomy.

Untersuchungen über die verschiedenen Moral-Systeme. K. LEIMBACH.
Fulda, 1894.

The author examines the several moral systems in reference to the relative positions they assign to law and freedom, in terms of the various probabilities for and against one or the other. He, thus notes the following systems:—absolute tutiorismus, laxismus, relative tutiorismus, probabiliorismus, æquiprobabilismus, and simple probabilismus. The last he regards as the true expression of ethics, both theoretical and practical, and defines it by the following rule:—In all cases of doubt between law and the free activity of the individ-

ual, when there exists a real probability favoring his free course of action, it is to be followed rather than the formulated law. It is the law. This theory is supported by three considerations. First, it allows for the supremacy of conscience. Second, it places freedom before law, as it is essentially. Third, it distinguishes between validum and licitum; the criterion of the former is to be found in terms of the certain; the latter, in terms of the probable. From the author's standpoint, which is evidently ecclesiastical, he finds a guiding thread which he is satisfied will lead him through the maze of the subtle problems of casuistry. This discussion throughout has a scholastic flavor, and abounds in quotations from patristic philosophy and church councils, as final authorities.

PRINCETON.

JOHN GRIER HIBBEN.

ABNORMAL.

Jeanne D'arc. Vom psychologischen und psychopathologischen Standpunkte aus. JOS. ZÜRCHER. Inn. Dissert. (Zürich). Leipzig, 1895.

With the support of Prof. Forel, of Zürich, the authoress endeavours in the above study to render intelligible, from a psychological and psychopathological point of view, the unique personality of the gifted child of nature from Dômrémy. Besides the records of the process of rehabilitation and of the contemporaneous chronicles, (in so far as the contents of both are virtually guaranteed) and the works of Vallet de Viriville, Beaurepaire, Eyrell and Mahrenholz, the sources consulted were principally the Latin and Old French records according to Ouicherat. From the last named the authoress has drawn a valuable extract which occupies 50 pages of her work and consists of the personal testimony of Joan with respect to her visions and voices. It is in the original tongue with appended German translation.

In chapter I. the authoress gives a sketch of the life of the young heroine, of her triumphal march and her cruel, tragic end. In Chapter II. an attempt is made to shed light on the personality of Joan of Arc, as yet so slightly comprehended from a psychological and psychiatric point of view in accordance with experiences of the theory of suggestion; and to classify this personality psychiatrically. An eminently gifted girl of unusual intelligence, deep moral earnestness and intense devotion to the dogmas of her church, she is, at the same time, an habitual religious hallucinatrix and auto-suggestionist. Her auto-suggestions have root in an old national tradition originating with the Keltic wizard Merlin, according to which a pure virgin from an oak-forest on the borders of Lorraine should free her country

after it had been brought to the verge of destruction through a woman (according to popular belief, the unnatural mother of Charles VII. of France.) She believes herself to be the chosen of God, her angels and saints prompt her with increasing vehemence to fulfil her divine mission: thus arises before us the symptomatic picture of systematic monomania. According to the authoress Joan of Arc was not the victim of actual mental disease. What in her is pathological—for instance, the variety and number of her hallucinations more especially—belongs to the pathology of genius which borders so closely upon insanity. 'In the genius of Joan of Arc lies the key to her story.' "She is a genius of the first rank, perhaps the greatest of known female geniuses in the history of the world." Her great intellectual gifts, the logical sequence of her thoughts and the absence in her of ethical defects characteristic of chronic paranoia, distinguish her, according to the authoress, from this class. Very impetuous and filled with ecstatic ideas, the maid disregards the reality and imperfections of life; she must, therefore, like all incorrigible idealists, finally tread the path of martyrdom.

After the above we need scarcely remark that with respect to the theory of suggestion the authoress advocates the views of the school of Nancy as opposed to those held at the Salpêtrière.

Though the style of the work is occasionally rather diffuse and not free from repetition, the train of thought in the second part lacking more especially in sustained clearness and precision, the authoress' merit in having investigated this interesting subject for the first time by the light of modern scientific knowledge, in having freed the character of this gifted heroine from prejudice, and further, in having delivered a spotless saint from the church 'out of which there is no salvation,' must yet be fully acknowledged. Notwithstanding this, the question as to the pathological classification of Joan of Arc may not yet be considered as finally settled. Nor can I agree with the view which the authoress, following Forel's idea, takes of consciousness. In spite of all recent endeavours to prove in one and the same individual a double consciousness, a double personality, a double ego, we must yet emphatically insist that there is and can be only one undivided individual consciousness it may exhibit, however, a graduated series of states. Elsewhere I shall have an opportunity of treating this point more in detail.

LEIPZIG.

FRIEDR. KIESOW.

The Pathology of Mind. H. MAUDSLEY. London and New York, Macmillan & Co., 1895. Pp. XI + 576. \$5.

In this new edition of his well-known work, Dr. Maudsley practically presents a new book. The omissions are large and the addi-

tions many, while the topics generally are rewritten. The work is a clear, philosophical and in most respects admirable compendium of mental disease, and a good book for general psychologists to make themselves familiar with.

The most interesting part of the volume to us is Part I, which deals with 'The Nature and Causation of Insanity.' Dr. Maudsley recognizes two conditions of mental defect, which will serve to recommend his book to modern psychologists—*i. e.*, the hereditary condition of the patient and the social condition. Possibly too little weight is given to heredity as such, since very large emphasis is laid upon the transmission of the effects of personal life, such as sexual dissipation, alcoholism, etc. Yet the essential truth, that insanity means a bad hereditary strain, is presented at length. The social condition spoken of relates rather to the definition of insanity than to its cause; and it does seem that Dr. Maudsley has laid his finger on the true differentia of mental abnormality in making the sign of defect the patient's lack of complete harmony with his social surroundings. "Insanity means essentially, then, such a want of harmony between the individual and his social medium, by reason of some defect or fault of mind in him, as prevents him from living and working among his kind in the social organization."

The author also makes the point very clear that social conditions may be the controlling ones in putting in evidence on the one hand, or in effectually hiding on the other hand, an individual's inherent weakness. Social conditions often 'prop-up' and make socially continent a man of essentially bad heredity: and it is just as true that social strain may 'touch-off' a man of slight abnormal variation and make him a lunatic. An interesting section is that (pp. 78 ff) which lays emphasis upon the social aspects of crime.

With such excellencies as these to commend it—and the treatment of Parts II–IV on the details of the insanities, which constitute the body of the volume, added on this side of the account—it is a pity that the author has not kept abreast of current psychology better than he has. He holds to the old flat-footed associationism, with the simple reflex-theory of nervous action, to explain all psychoses by. And, as of old, so here also, Dr. Maudsley appeals to nervous action as the final term of explanation. A little reading of Pierre Janet, whose name does not occur in the index, would inform Dr. Maudsley of the way the more difficult mental abnormalities may be approached on the mental side. But even to appreciate such books as Janet's, Maudsley would have to know something more of the mental processes which go with attention, sentiment,

volition, and all the phenomena of segregation, abnormal syntheses, etc., than the old English associationism knew. For example, compare Dr. Maudsley's crude note on the 'Subliminal' (pp. 118-119) with Janet's patient treatment of the stigmata which illustrate it. Perhaps it is a practical aspect of this theoretical defect that leads Dr. Maudsley to show the pitiable *heartlessness* that he does in alluding to religion, and even to certain of the more refined bearings of morality. So great is this defect, taken as a whole, that the book must be looked upon as one of the latest and best works of a school of writers which is just about to be 'turned down' in the historical progress of the science of abnormal mind. For if we are learning anything in this sphere in these late years, it is that the adequate understanding of anomalies of *sentiment*—personal, social, ideal—is to supply the superstructure to the foundation long ago laid by the psychology of association. But the appreciation or elucidation of sentiment is not Dr. Maudsley's forte.

J. M. B.

NEW BOOKS.

- The Growth of the Brain.* H. H. DONALDSON. London, Walter Scott; New York, Scribners, 1895. Pp. 374. \$1.25.
- Die Seele des Kindes.* W. PREYER. Vierte Auflage, Leipzig, Griebner's Verlag, 1895. Pp. XI+462.
- Psychology in Education.* R. N. ROARK. New York, American Book Co., 1895. Pp. 312. \$1.
- Introduction to Philosophy.* FR. PAULSEN. Translated from the third German edition by F. THILLY, with preface by W. JAMES. New York, Holt, 1895. Pp. XXIV+437. \$3.50.
- The Principles of Morals.* T. FOWLER and J. M. WILSON. Oxford, Clarendon Press; New York, Macmillans, 1895. Pp. XXI+138+370. \$1.90.
- A Textbook in Physiology.* M. FOSTER. Revised and abridged (in one volume) from the author's work in five volumes. New York and London, 1895. Pp. XLVIII+1183. \$5.
- Die Seelenkunde der Menschen als reine Erfahrungswissenschaft.* M. BENEDIKT. Leipzig, Reisland, 1895. Pp. 372.
- Tempérament et Caractère selon les Individus, les Sexes, et les Races.* A. FOUILLÉE. Paris, Alcan, 1895. Pp. 378.
- Hedonistic Theories from Aristippus to Spencer.* JOHN WATSON. Glasgow, Maclehose; London and New York, Macmillan, 1895. Pp. XIII+248. \$1.75.

Studies in the Evolutionary Psychology of Feeling. H. M. STANLEY. London, Sonnenschein; New York, Macmillans, 1895. Pp. VIII + 392. \$2.25.

Selections from Plato for English Readers. From the translation of B. JOWETT. Edited by M. J. KNIGHT. Oxford, Clarendon Press; New York, Macmillans, 1895. 2 vols. Pp. XXXVII + 242, VII + 245. \$3.50.

The Psychology of Number. J. A. McLENNAN and J. DEWEY. New York, Appletons, 1895. Pp. XIV + 309. \$1.50.

NOTES.

"With the September number, the *American Journal of Psychology* enters upon its seventh volume. The preceding volumes (1887-1895) have been edited by President G. Stanley Hall (Clark University). For the future, the editorial responsibility of the *Journal* will be shared by President Hall, Professor E. C. Sanford (Clark University) and Professor E. B. Titchener (Cornell University). A coöperative board has been formed, which includes the names of Professor F. Angell, Professor H. Beaunis, Professor J. Delboeuf, Dr. A. Kirschmann, Professor O. Külpe, Dr. A. Waller, F. R. S., and Professor H. K. Wolfe. The *Journal* will be devoted exclusively to the interests of experimental psychology (psychophysiology, psychophysics, physiological psychology, etc.). Each number will contain, as heretofore, original articles, reviews and abstracts of current psychological books and monographs, and notes upon topics of immediate psychological importance. Contributions may be addressed to either of the three editors."

We take pleasure in inserting the above notice at the request of Professor Titchener. In the meantime the Sept. No. of the *American Journal* has come to hand. Its title-page reads in part as follows: "edited by G. Stanley Hall, President and Professor of Psychology, Clark University, assisted by E. C. Sanford, Clark University, and E. B. Titchener, Cornell University. With the coöperation of etc., etc. . . . Clark University, Worcester, Mass. J. H. Orpha, Publisher." We are obliged, in justice to the table of contents of the first two volumes of THE PSYCHOLOGICAL REVIEW, to protest against the following sentence from the 'Editorial' of this number of the *Amer. Journal*:

"I. The results of experimental investigations in psycho-physic laboratories. To this *Archiv* function, not yet represented by any serial publication in this field in English, etc."

Professor A. RIEHL of Freiburg has accepted a call to the University of Kiel.

Dr. JOHN BIGHAM has been appointed Professor of Philosophy in De Pauw University, Greencastle, Indiana. Work will be done in experimental psychology.

Dr. W. G. SMITH (Edinburgh and Leipzig) has been appointed Associate Professor of Philosophy in Smith College. He will have charge of the work in experimental psychology, for which the trustees recently made an appropriation.

The *Revue Néo-Scholastique* has begun a general bibliography 'des Ouvrages et des Revues de Philosophie' under the title *Sommaire Idéologique*, beginning with the literature of 1895. The first instalment, giving 595 titles, appeared in the July issue.

All communications for the editors of the PSYCHOLOGICAL REVIEW, together with publications intended for review, should be sent during the year beginning November 1st, 1895, to Professor J. McKeen Cattell, Garrison-on-Hudson, New York. Authors are especially requested to make the sending of reprints, papers, &c., as prompt and general as possible.

The second number of *The Psychological Index*, being a bibliography of the literature of Psychology and cognate subjects for 1895, will be issued on February 1st, 1896. It is sent free to all subscribers to the PSYCHOLOGICAL REVIEW. By arrangement with this REVIEW, it will also be published in France as part of the *Année Psychologique*. When authors are not able to send their publications to the REVIEW, the receipt of the titles, with name of author and publisher, place of publication (or name of Review or Archives), and number of pages, will assure their proper insertion in the *Index*. Communications for the *Index* should be sent to Dr. Livingston Farrand, Columbia College, New York, or to Mr. Howard C. Warren, Princeton University, New Jersey.

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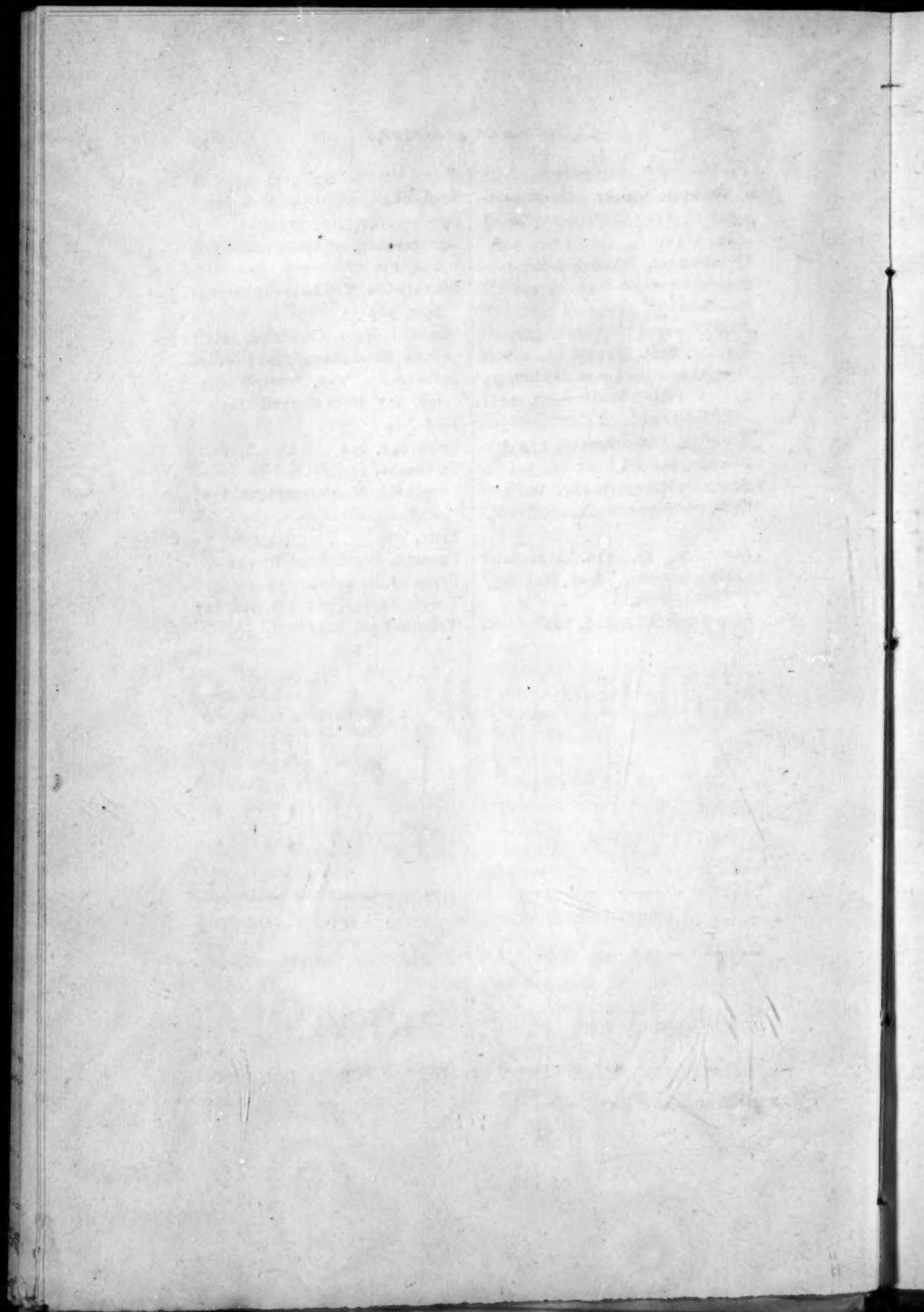
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